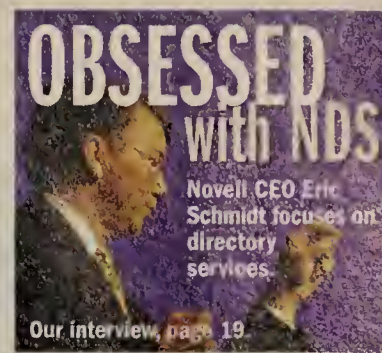


# NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING



Our dinner guests (from left): Nexabit's Mukesh Chatter, Avici's Surya Panditi, NetCore's Ashraf Dahod, Pluris' David Bernstein and Argon's Mike Grady.

## Fast Router Feast

CEOs from five high-speed router start-ups chow down on convergence, QoS and other hot topics.

By Jeff Caruso and Bob Brown  
Atlanta

The high-speed Internet router start-ups haven't conquered anything yet, but their dreams sure are big.

That's why having lunch at a popular restaurant here called Veni, Vidi, Vici ("I came, I saw, I conquered") with the CEOs from five of the start-ups seemed a bit premature. It was also strangely appropriate, because these are the leaders who came to the Internet and saw the need for boxes that route faster than anything the world has ever seen. But actually building these gigabit- and terabit-speed routers and conquering the market — well, that may be another story.

For now, at least, these guys are stoked, just like the Gigabit Ethernet start-up CEOs we wine and dined during several such get-togethers over the past two years. While the router companies have no plans to sell their wares to enterprise customers, their products promise to have a big impact on the types of services users can

See Router vendors, page 72

# PC servers get big iron boost

By Marc Songini  
Research Triangle Park, N.C.

Bidding to regain market share lost to other server vendors, IBM last week outlined plans to bring mainframe-like throughput and high-end clustering capabilities to its Netfinity server line.

IBM says it will replace Netfinity's PCI I/O bus architecture with what it calls Future I/O. The new I/O scheme will more than double the throughput of existing high-end Intel servers, says Tom Bradicich, director of server architecture and technology at IBM's personal computer group.

Big Blue's plan to bolster the power, throughput and reliability of its Netfinity server family could make it easier for users to justify running large-scale distributed applications, databases and Web sites on the boxes rather than on compet-

ing PC and Unix servers from competitors, such as Compaq, Hewlett-Packard and Dell.

In the long term, Netfinity servers implementing Future I/O will be capable of handling "dozens" more adapters than

See IBM, page 16



### SERVER REDESIGN

In the future, Netfinity's current PCI bus system will be replaced with a mainframe-like channel, which will:

- Reduce CPU cycle consumption.
- Boost throughput and scalability.
- Improve performance and reliability.

# Alteon powers up switches

By Jeff Caruso  
San Jose, Calif.

Alteon early next year will unwrap data center switches that have more than 20 times the capacity of the company's current products.

Code-named Genius, the stackable and chassis-based switches will run Alteon's cur-

rent server load balancing, as well as other Layer 4 software services, sources say. The switches will improve the performance of the services by running them in Application Specific Integrated Circuit (ASIC)-based hardware.

Sources say the switches will also add several new functions,

including security services and bandwidth management.

The largest product in the Genius line will have a 180G bit/sec backplane capacity and support a mix of more than 100 Fast and Gigabit Ethernet ports. The most powerful Alteon server switch

See Alteon, page 73

# Frame does voice cheap

By Denise Pappalardo

Imagine cutting your corporate long-distance bills in half.

That's what Gardner Bender

company expects to do with a new managed voice- and fax-over-frame relay service MCI WorldCom Advanced Networks plans to announce this week.

By combining voice, data and fax on a single service, Gardner Bender, a beta site user, expects to slash its monthly telecommunications bill in half, says Paul Reese, the company's IT services manager.

See Frame relay, page 73

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Tom Veronie is rolling out SAP R/3 at BFI headquarters and 500 remote offices. "The SAP component is the smallest piece of the pie," he says.



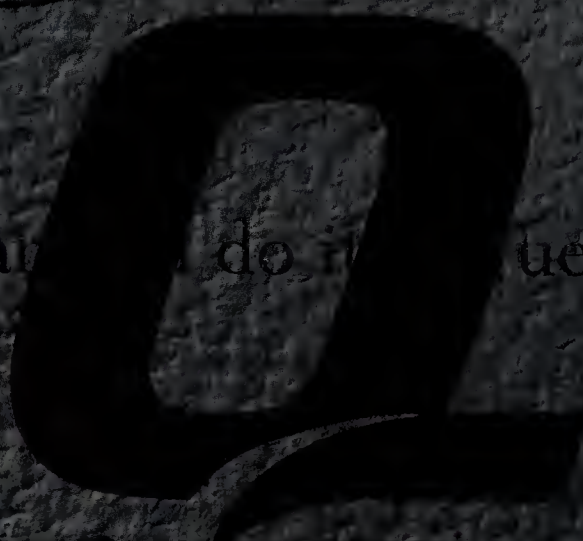
Careful — and generous — capacity planning is key to building a network that will stand up to enterprise resource planning systems. **Page 47.**

**A suite diagnosis:** VitalSigns' VitalSuite 2.0 takes home a World Class Award for giving the straight dope on network performance. **Page 53.**





And can we do it Tuesday?



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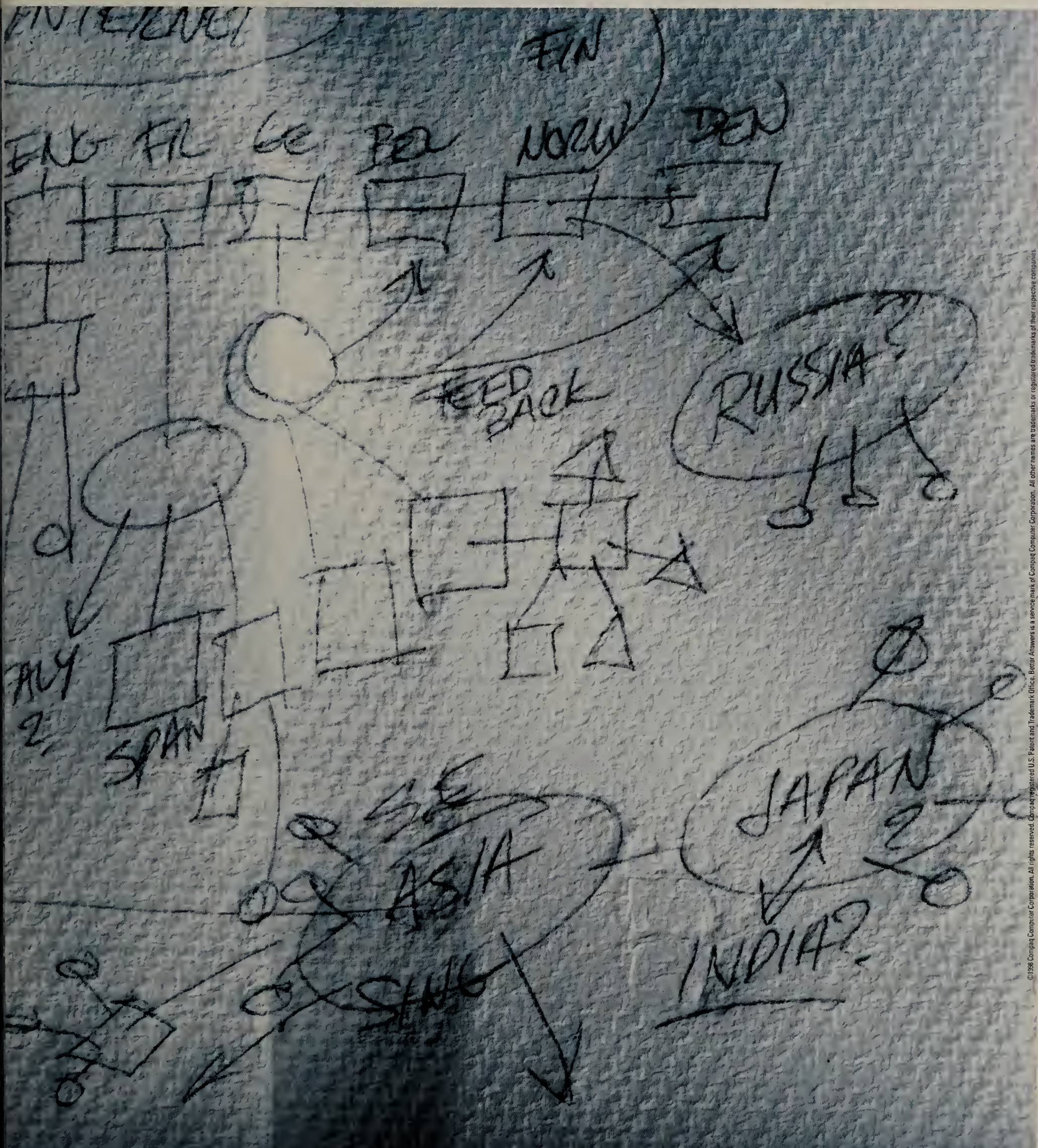
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## SERVICE PLAY

Concentric CEO Henry Nothhaft says his company will provide SBC Communications with quick access to a variety of IP services. Page 32.

## VPN VARIETY

Cisco's new 1720 router is designed to deliver a host of virtual private network options to small and mid-size businesses. Page 12.



## FOUNDING FATHERS

Onami Bernheim offers some insight into what it's like to start your own IT company. Page 57.



CAROL PEERCE

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**NetworkWorld Fusion**  
www.nwfusion.com

## This Week

### Only on Fusion

**Spam.** How do you get it off your net? Paul Hoffman of the Internet Mail Consortium offers some tips and is online all week to answer your questions. **DocFinder: 9177**

**Technologies.** We're expanding our Net Resources. New this week: Enterprise resource planning and storage-area networks. If you need to get up to speed, you'll find primers and tutorials, plus links to more advanced resources.

**DocFinder: 9182**

**Job titles.** You see ads for jobs that didn't exist a couple years ago: Internet Architect, Web Innovator and Electronic Commerce Expert. A reader wants to know what new job titles you've seen. Which are really new, and which are just the same old jobs with new names? **DocFinder: 9183**

**Columnists.** Looking for past articles by our columnists? You'll find them all online. **DocFinder: 9184**

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## FEATURES

**Preparing for ERP:** Careful — and generous — capacity planning is key to building a network that will stand up to enterprise resource planning systems. Page 47.

**A suite diagnosis:** VitalSigns' VitalSuite 2.0 takes home a World Class Award for giving the straight dope on network performance. Page 53.

**Cool Tools:** General Magic's Portico — the personal assistant for mobile professionals. Page 55.

**Brother Industries' John McBride** is one of the lucky ones. One year into an SAP rollout, his network utilization is only 10%.



## News briefs, November 2, 1998

### A senator in orbit is nothing compared to this

After NASA successfully launched John Glenn back into space after 36 years, a real challenge loomed over the weekend: how to complete a phone call over a satellite network. Iridium, a global calling and paging firm with a network of 66 satellites in low-earth orbit, was scheduled to make its delayed service launch on Nov. 1. But reports indicated that in last-minute tests, uncompleted or dropped calls were still running too high, and as a result, Iridium might limit the service launch to areas where Earth gateways are functioning the best. Iridium previously missed a service launch date of Sept. 23, blaming new software loads for unacceptably low levels of call completion and quality.



Space challenge: John Glenn v. Iridium.

### What's good for the goose . . .

In a classic reversal of roles, local exchange carriers (LEC) are demanding the Federal Communications Commission force AT&T to open up access to the cable networks it's due to obtain in its pending merger with Tele-Communications, Inc. (TCI). Leading the charge are US WEST and GTE, which have an unusually large proportion of TCI cable franchises in their territories. The telcos want the FCC to require that the millions of future AT&T/TCI local loops be available to competitors that also might want to offer cable telephony and Internet access. The LECs' actions come two years after AT&T led the lobbying for rules forcing the likes of US WEST and GTE to open up their local loops to competitors such as AT&T.

### Better late than never

Motorola has finally made official what many had hinted at: it's agreed to become a shareholder in Symbian, Ltd., the joint venture formed by L.M. Ericsson Telephone, Nokia and Psion to develop wireless information devices using Psion's EPOC operating system. Although Motorola's involvement was first made public on June 24 when the venture was announced, Motorola only last week completed definitive agreements to become a shareholder. Symbian is aiming for its technology to be used in smartphones and other wireless handheld computers.

### A rose by any other name . . .

Microsoft last week rechristened the upcoming and long-awaited Windows NT 5.0, which will now be called Windows 2000. The name change means that what has been referred to as Windows NT Workstation 5.0 now will be called Windows 2000 Professional, while Windows NT Server 5.0 becomes Windows 2000 Server. The software giant also announced various flavors of the server product line, tailored to different slices of the market: Windows 2000 Server, Windows 2000 Advanced Server and Windows 2000 Datacenter Server. Windows NT 4.0 and Windows 98 products will keep their current names, Microsoft says. The company has not yet announced what the specific name of the upgrade to Windows 98 — aimed at consumers — will be called or when it will ship.



### Wall Street no Easy Street for Sprint PCS

Sprint last week said the turbulent atmosphere on Wall Street has sidetracked its plans for an initial public offering (IPO) of its Sprint PCS wireless venture. Cable companies Tele-Communications, Inc., Comcast and Cox Communications, Sprint's original partners in Sprint PCS, are selling their stakes in the company to Sprint. Sprint, in turn, plans to take Sprint PCS public through the IPO. Sprint will have complete management control of Sprint PCS after the cable companies sell their stakes.

By Chris Nerney

New York

Early beta customers of Sun Microsystems' upgraded Solaris software say the product appears to achieve Sun's goal of widening its lead over Microsoft's Windows NT in performance and scalability.

In announcing Solaris 7 at a press conference here last week, Sun officials specifically touted the performance and scalability of the software's full 64-bit kernel, which they say lets more applications run on a single server and supports tens of thousands of users simultaneously.

"We didn't know what to expect. Sun traditionally isn't seen as a supercomputing company," says Mark Uris, head of distributed systems for the Scientific Computing Division of the National Center for Atmospheric Research in Boulder, Colo. "But our people who ran benchmarks on [the Solaris 7 beta] reported it was an order of magnitude faster as far as code performance," he says. "We were extremely impressed."

Another user agreed. "The big thing to us is the 64-bit capability," says Jim Bogard, manager of Unix systems engineering for Digex in Beltsville, Md. Bogard says his department has been testing a beta version of Solaris 7 since last spring. "Our in-house benchmarking shows a distinct performance advantage," he says.

Digex, an ISP, says scalability is important to many of its clients. "The vast majority of our customers do a lot more than just serve static Web pages," Bogard says. "We have a lot of customers with big database back ends, so they really need the horsepower you can get out of Solaris 7."

The current version of Solaris is 2.6. While Sun has been calling the beta version of its latest offering Solaris 2.7, the company has renamed the commercial release Solaris 7 as a marketing move. Microsoft also renamed Windows NT last week. NT 5.0 will hereafter be known as Windows 2000.

Other Solaris upgrades include the ability to add CPUs and memory without rebooting; Year 2000 compliance; an updated Java Development Kit (JDK); backward compatibility to handle 32-bit applications;

and PC interoperability that allows customers to manage their Windows NT environments with Solaris.

Sun Chief Operating Officer Ed Zander also offered the New York audience a glimpse

### Solaris: A look ahead

Besides unveiling the latest version of its enterprise operating system software, Solaris 7, Sun Microsystems last week outlined features planned for the next two Solaris releases. Highlights include:

#### Solaris 7

- 64-bit environment
- NT interoperability
- JDK 1.2 beta
- Enhanced remote access

#### Solaris 8

- Integrated Full Moon clustering
- Microsoft Active Directory
- NetDynamics apps server

#### Solaris 9

- Full Jini network capabilities
- Java APIs
- Native Java middleware support

SOURCE: SUN, MOUNTAIN VIEW, CALIF.

of future Solaris products. Solaris 8, he says, will feature the first complete implementation of Sun's Full Moon clustering technology, and Solaris 9 will include support for the company's recently announced Jini network initiative.

Introduced in March 1997, Full Moon is designed to consolidate Sun's many clustering

software products.

Digex's Bogard says he would have liked to see Full Moon in Solaris 7. "Right now, we're examining other vendors' products because, to be blunt, Sun's cluster offering is prohibitively expensive," he says. "But if they're going to integrate it into the operating system we're extremely interested in deploying that. We have a number of customers who want to do bicoastal mirroring and bicoastal clustering."

Zander declined to announce release dates for Solaris 8 or Solaris 9.

There are three versions of Solaris 7 for both SPARC and Intel platforms. Solaris Easy Access Server 2.0, previously known as Solaris for Intranets, features easy installation and management, and includes Sun's Project Cascade, which allows for NT interoperability.

Solaris Enterprise Server 1.0 is designed to handle enterprise resource planning, data warehousing and electronic commerce applications.

Solaris ISP Server 2.0 is tailored toward the needs of service providers and features support for Web applications such as newsgroups, e-mail and calendaring.

Solaris 7 is due to start shipping later this month. Pricing for the base software starts at \$450 for the desktop version and \$695 for the server product. Easy Access Server is priced at \$595. Solaris ISP Server, due out next month, sells for \$5,995. Solaris Enterprise Server is slated for release in the first half of 1999. ■

## New business plan due for Java

Sun today is expected to outline a new business model for its Java Software division, as well as make several Java platform and product announcements.

Company officials declined to discuss details, but the changes in the Java business model may be related to licensing issues and the standardization process, particularly for embedded devices.

Sun reportedly has developed a new standards process that would allow nonlicensees to provide input regarding Java specifications. The company also may present a plan designed to address complaints of companies that object to paying a license fee merely to participate in the Java standards process.

— Chris Nerney



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# NaviSite debuts Web app services

*Company offers features to ease the burden of managing complex Web sites.*

By Denise Pappalardo  
Andover, Mass.

NaviSite Internet Services is moving from the relatively simple world of Web hosting to the more complex area of applications.

NaviSite has teamed with several software companies, including Engage/Accipiter, LivePicture, iCat, OpenMarket and CyberCash, to let customers outsource the management of Web sites.

One company is already

testing the service, and with good results. L & H Vitamins' Web site has been hosted by NaviSite for nearly two years. The vitamin supplier just started using NaviSite's iCat Catalog Hosting and Management Service.

"We decided we wanted to do more with our Web site, and that's when we went with NaviSite," says Fred Mutsman, IT administrator at the Long Island City, N.Y., company. Now that

L & H has added the iCat catalog software to its Web site, the company is able to offer its 11,000 products online. "Revenue from the site is growing approximately 10% to 15% every month," Mutsman says.

NaviSite is also offering AdBureau, a service based on Engage/Accipiter's AdServing and AdManager software, which tracks advertising impressions.

Also being offered is the

CyberCash Shared Credit Card Clearing Application Service, which will let small to mid-size commerce sites perform credit card authorizations. Pricing is based on the number of transactions processed per month (see graphic).

By year-end, NaviSite will release Open Market Transact Commerce Service. The Open Market service will offer users a direct connection to credit card processing houses such as First-USA and PaymentTech.

Users will get online customer authentication, authorization, order and payment processing, automated tax and shipping calculations, and online tracking and status capabilities. Pricing is not available for these services.

NaviSite also rolled out LivePicture Shared Image Enhancement Application Service, which lets users store, manage and add high-resolution images to their Web sites.

NaviSite is hosting and managing various application services at its data centers

around the country. Users get 24-7 management and monitoring of their Web sites and applications.

All of the services except the Open Market service are available now.

© NaviSite: (888) 298-8222

## NaviSite launches Web-centric application hosting

NaviSite will launch more application hosting services in the next few months, but here are a few of its first offerings aimed at making electronic commerce and Web sites easier to support and manage.

NaviSite hosted applications	Setup fees	Monthly costs
CyberCash Shared Credit Card Clearing	\$245	\$85 to \$275
Engage/Accipiter AdServing and AdManager	\$3,500	\$1,500 to \$25,500
iCat Dedicated Catalog Hosting	\$750	\$2,000 to \$4,000
iCat Shared Catalog Application	\$750	\$625
LivePicture Shared Image Enhancement Application	\$500	\$750 to \$3,749

# Wyse thin client has multiple personalities

By John Cox  
San Jose, Calif.

Wyse Technology next week plans to unveil a thin client that company executives claim will be the death knell of the Java network computer (NC).



Dubbed a "protocol machine," the new Wyse WinTerm 5000 Network Terminal hosts an array of emulation and communication protocols.

The new Wyse WinTerm 5000 Network Terminal is designed to let users have a thin-client desktop, a local browser and an array of communications software to access applications just about anywhere: on Unix servers, mainframes and multiuser Windows NT servers.

"A lot of our clients have several different server environments," says Mark Pilgrim, sales manager at Enterprise Systems, a Morrison, Colo., network integrator. "They have print and file servers for office applications and Unix servers with vertical applications. Now with the WinTerm 5000 Network Terminal, we can sell them one device that lets them access whatever they need."

Wyse executives say the touted Java NCs remain too expensive and are hamstrung by the lack of shrink-wrapped Java applications. By contrast, the WinTerm 5000 Network Terminal will be able to access Java applications running on servers and use its local browser to access the World Wide Web.

## Extends existing line

Wyse will add the Series 5000 Network Terminal line to its existing line of Windows-based terminals, which are display devices designed to work with multiuser NT servers, such as Microsoft's Windows NT Server 4.0, Terminal

Server Edition (TSE) and Citrix Systems' WinFrame.

But for the Series 5000, Wyse created a graphical user interface that mimics Windows, so users of the 5000 can open sessions to different servers, and resize and move each window without having to connect with a TSE server.

The WinTerm 5000 Network Terminal supports: an array of communications protocols to access servers; the Wyse Navigator browser (based on code licensed from Netscape); and the Tarantella client.

This last bit of software, licensed from The Santa Cruz Operation lets the terminal access a Tarantella server, which in turn connects the user with a wide range of network applications and services.

Prices for the WinTerm 5000 Network Terminal are \$650 for the bookend-like system box, which can be plugged into any standard VESA monitor; \$840 for a 14-inch color monitor version, with the system hardware and software integrated into the monitor case; and \$899 for a 19-inch monitor version in a

similar package.

The terminal will begin shipping in small quantities at Fall Comdex later this month and will ship in volume during early 1999.

Analysts agreed that Wyse appears to have a well-thought-out, well-timed product.

## Covers a lot of bases

"Our clients' interest in thin-client technologies was really about finding a next-generation terminal — a really thin-client desktop that would get to every application, both new and old," says Audrey Apfel, vice president at Gartner Group, the Stamford, Conn. market research company. "The new Wyse terminal does a pretty good job of fitting that model."

"In the thin-client market, one device isn't right for everyone," says Eileen O'Brien, director of the thin-client program at International Data Corp. of Framingham, Mass. "The Wyse Network Terminal does everything the Java network computer does but without the Java operating system." ■

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# Web site e-mail products maturing

*Brightware's, Aptex's latest offerings boast routing, queuing and other capabilities.*

By Paul McNamara

As the amount of e-mail generated by corporate Web sites continues to balloon, so do the prospects of companies selling software to manage this message onslaught.

Two of these vendors — Brightware of Novato, Calif., and Aptex Software of San Diego — this week will announce upgrades to their product lines. The new versions will help customers sort, route, queue and automatically answer high volumes of e-mail sent to Web site alias addresses such as info@company.com.

While only 160 organizations purchased such software in 1997, according to a survey by International Data Corp. (IDC) of Framingham, Mass., the market is projected to grow to 12,000 customers by year-end and 25,000 by the end of 2002.

Brightware's upgrade, called Brightware Version 3, adds e-mail routing and queuing capabilities to the company's existing product, which generates replies to frequently asked questions. The new server-based Contact Center component determines which in-house employee is best-suited to answer e-mail that cannot be handled automatically, then routes the mail to that person, along with a suggested reply.

Contact Center runs on Windows NT and works with Lotus Notes and Microsoft Exchange e-mail clients. A 10-user Contact Center license, which does not include the Answer Agent automatic response capabilities, costs \$75,000. The complete pack-

agents to hone their answers, and the ability to have targeted sales pitches tacked on to the bottom of replies.

SelectResponse is server software that runs on NT or Solaris and works with any Java-enabled Web browser.

According to IDC analyst Mark Levitt, Brightware and Aptex are the early leaders in the high end of this emerging market, which lately has drawn interest from brand-name companies such as IBM and GTE Web Solutions.

"The common thread between Aptex and Brightware is they are looking to

expand their functionality so that they can cover all of the various categories: queuing, routing and auto-response," Levitt says.

Companies that receive heavy volumes of Web site e-mail will particularly want to exploit the advantages of software-generated e-mail replies, he adds.

One Brightware customer sees this type of software as indispensable for growing companies that do a lot of business on the World Wide Web.

"We really believe that Brightware gives us the ability

to increase our customer service, and at the same time, increase the productivity of our organization," says Sean Marsh, vice president of sales and marketing at Access National Mortgage, a discount mortgage broker in Wilmington, Mass.

Marsh sees Brightware allowing his company to handle more e-mail in the future without having to add customer service personnel.

"Our goal is to go from a company that exists in 14 states to a national company," he says. "If we're a national company, then we should expect about five to eight times more volume in e-mail" from the company Web site.

© Brightware: (800) 532-2890; Aptex: (619) 623-0554

## Coming to grips with customer e-mail

A survey of Web site e-mail practices shows:

- More than 75% of the organizations surveyed have a Web site e-mail address for on-line inquiry.
- Fewer than a third have software installed to route and respond to customer e-mail. About 30% have plans to implement such a system in the next 11 months; another 18% will do so afterward.
- More than half don't have a policy specifying appropriate e-mail response time. Of those who do, most say they reply within 24 hours.

SOURCE: EGAN CORP. SURVEY OF 250 ATTENDEES AT RECENT CUSTOMER SERVICES AND SUPPORT CONFERENCE IN SAN FRANCISCO.

age, which includes installation, professional services and first-year maintenance, costs \$150,000.

Aptex's SelectResponse 3.0 also adds queuing and routing to existing automatic response capabilities through integration with the Adante 2.0 e-mail workflow application from Genesys Telecommunications Laboratories. Version 3.0 also includes an improved Java-based graphical user interface, enhanced "learning" capabilities that allow the reply-generating

## Sirrus adds 'extranet' strength to server

By Ellen Messmer

San Francisco

Sirrus Internet Solutions this week will ship a new version of its Web access-control server software, which lets multiple administrators manage the addition or deletion of user lists and content permissions.

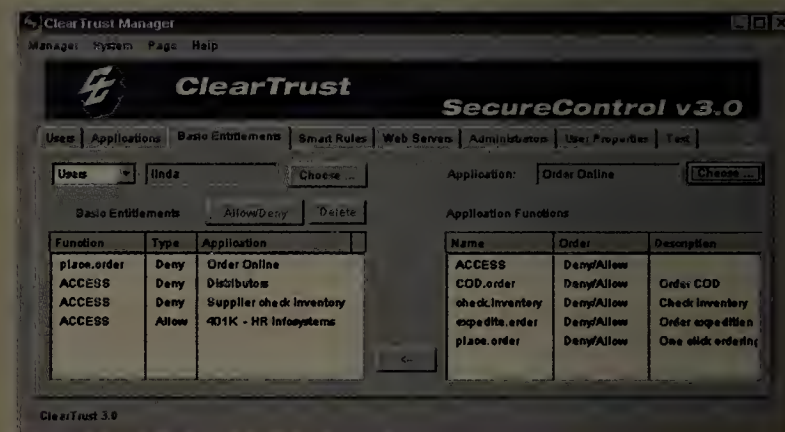
Called ClearTrust SecureControl Version 3, the new software can authenticate users' identities by means of passwords or digital certificates. Once authenticated, users are given a personalized Web page that describes where they can go. The software allows not only administrators, but also selected business partners, to control remote access to content over the 'Net.

In Version 3, Sirrus has revamped the Web access-control server in two ways. The server now supports Lightweight Directory Access Protocol, so systems administrators can use their back-end LDAP databases, rather than the Sirrus database, to store user names.

The ClearTrust SecureControl server also lets administrators construct complex rules to check users' rights to gain access to certain content. For instance, ClearTrust can require a check of a back-end database to see if a user has paid for a subscription. "This means that the server can now

### CLEARTRUST BROADENS EXTRANET ACCESS

The ClearTrust Java administrator is used to graphically manage access control for partners, customers and employees on the extranet. ClearTrust allows policy administration to be distributed across the Internet to business partners for self-service administration.



look at rules in any LDAP directory rather than having to store them in the ClearTrust database as before," says Eric Olden, Sirrus' president.

Another feature of the new software is the ability to have multiple systems administrators, rather than just one, define users and their privileges.

In what Sirrus calls Virtual Business Units, the ClearTrust server software can now be compartmentalized so different corporate departments or even trusted business partners can manage their own separate user lists.

"You can delegate to people closer to the access-control decisions," Olden says. "You could even push it out to your

[business] partners. The outside organization would be allowed to set up its own user groups."

Financial firm Lehman Brothers, which has been testing the beta version of ClearTrust, expects to use the software in its online trading and research services, using passwords and digital certificates from VeriSign and Microsoft.

"We can authenticate users across all these services because it's single sign-on," says Dave Macolino, Lehman's vice president of Internet services.

Pricing for ClearTrust SecureControl starts at \$15,000.

© Sirrus Internet Solutions: (415) 764-4900

## SPOTLIGHT SERIES

This week's Spotlight Series forum focuses on how to fight spam — with laws and technology. While some net administrators are tackling the problem by implementing strict mail rules, others are turning to the government to settle the score. **Paul Hoffman**, director of the Internet Mail Consortium, will be online all week to discuss the effects of bulk e-mail on companies. Hoffman will answer your questions and offer you insight on the most recent developments in the war on spam. So head to Network World Fusion and let our expert help you get to the bottom of this growing problem.



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## THE MICROSOFT DIARIES

Week two

### MONDAY, OCT. 26

This is the second week of the long-awaited Microsoft-Department of Justice trial, and from the looks of things, it is going to be another doozy of a week. Microsoft counselor John Warden was spit-tin' bullets again. Most of you folks probably remember that the core of the government's case is the allegation that Microsoft wanted to split the browser market — Microsoft would handle the Windows side and Netscape would build products for all other operating systems. There's not a heap of money in OS/2, Mac, Unix, Amiga and TRS-DOS, so Netscape politely declined. Or so the story goes.

But Microsoft has a different version. "It was a setup, Judge!" Johnnie Cochran . . . uh, I mean John Warden, basically contended. The whole thing happened because the government and Netscape wanted to stop Microsoft from competing with Netscape. Warden says that Navigator author Marc Andreessen immediately forwarded notes of the June 21, 1995 meeting between Netscape and Microsoft to his corporate attorneys, who sent them to noted Microsoft legal nemesis Gary Reback. It didn't take long for Reback, a private attorney who has fought with Microsoft before, to pass them on to the feds.

Warden, who just like last week had Netscape CEO Jim Barksdale trapped in the witness chair, claimed the whole meeting was set up to get the goods on Microsoft.

"That's absurd," Barksdale barked.

I can hear Warden's closing argument now: "If the market's not split, you must acquit."

### TUESDAY, OCT. 27

Jim was back for his fifth appearance. He must be wearing a couple of grooves in the old witness chair by now. Today was easier on the dapper Barksdale

because the government's lawyer, and not Microsoft's pit bull, was doing the asking.

It still is kind of a weird setup. The original testimony is written, the witnesses are cross-examined in person, and the other side gets to follow.

In this case, the Justice Department's David Boies attempted to rehabilitate the Barksdale saga that Warden tried so hard to beat down.

Again going back to e-mail (hasn't anyone heard of the delete key?), Boies

argued that Microsoft wanted the 32-bit browser space to itself. The message in question was from wily Microsoft vet Paul Maritz to Bill Gates discussing the goal of ejecting Netscape from the 32-bit Windows game.

With kinder questioning from Boies, Barksdale spoke of how Microsoft withheld information about key Windows APIs, all because Netscape had rejected Redmond's divide-and-conquer browser market offer.

### WEDNESDAY, OCT. 28

We had a new witness today, David Colburn, a senior vice president for America Online. Colburn's written testimony was already part of the record, so this was cross-examination time, which means Warden was once again let out of his cage.

In Colburn's written statement, the AOL executive claimed his company picked Internet Explorer as its default browser mainly to get an AOL icon on the Windows 95 desktop. Warden, however, claimed that Internet Explorer's technical superiority and component nature were the real reasons.

Colburn conceded that Microsoft would have had an integrated Windows 95 browser out sooner than Netscape, and so Microsoft had a bit of a technical advantage there, but he otherwise stuck to his icon placement guns.

Then Warden fought fire with fire, claiming Netscape and AOL had been plotting to divide the browser and online access markets by agreeing to stay clear of each other's businesses. Warden pointed to e-mails (there's those pesky e-mails again) between Barksdale and AOL kingpin Steve Case, in which they called themselves Roosevelt and Stalin and saw themselves as engaged in an epic battle with the forces of evil.

### THURSDAY, OCT. 29

Yesterday it sounded as if AOL had struck an exclusive deal with Microsoft, at least after Netscape and AOL's grand alliance against the Microsoft Axis power disintegrated.

Now, get this, Microsoft contends it is really AOL and Netscape that have the fat exclusive deal. It seems that AOL still sought an integrated browser from Netscape after the Microsoft deal was signed, and the online giant bundles a Netscape instant messaging product.

Also today the Justice Department was supposed to show the Gates deposition, which while not as anticipated as Clinton's, has had many a techie itching for a viewing. Sorry, that will have to wait until next week, as the trial takes Friday off.

— Doug Barney

## Cisco router brings VPNs to small offices

By Jim Duffy  
San Jose

Cisco last week announced a router built to bring the benefits of virtual private networks (VPN) to small and mid-size businesses.

The Cisco 1720 is designed to lower WAN costs, maintain network security and availability, and integrate the functions of several network devices in one product.



Cisco's 1720 can help lower long-distance bills.

The 1720 features a single 10/100M bit/sec autosensing Ethernet port, one auxiliary port that supports asynchronous communications up to 155M bit/sec, and two WAN interface card slots.

The 1720 supports all of the WAN interface cards available for Cisco's existing 1600, 2600 and 3600 routers, including: single- and dual-port serial, dual-port synchronous/asynchronous, ISDN S/T and U Basic Rate Interfaces, 56/64K bit/sec four-wire DSU/CSU and T-1/fractional T-1 DSUs/CSUs.

The integral DSUs/CSUs help reduce equipment costs, Cisco claims. Long-distance charges can also be lowered through the use of VPNs, which only require a local call to an ISP.

Law office Keesal, Young & Logan in Long Beach, Calif., has an office in Hong Kong that is expensive to reach using ISDN lines, says Chris Hagmann, director of technology at the law firm. The 1720 allows the firm to use a fractional T-1 at 256K bit/sec, which Hagmann says reduces WAN costs by 35%.

"We can go fractional T-1 right to a local Hong Kong Internet provider and run an encrypted link from the Hong Kong office to the other side of our PIX firewall here in Long Beach," Hagmann says. "It's allowed our Hong Kong office to be fully integrated into our WAN."

For VPNs, the 1720 runs software that provides firewalling, IP Security and Layer 2 Tunneling Protocol data encryption. Software-based encryption is supported at speeds up to 512K bit/sec for 256-byte packets via a Reduced Instruction Set Computing processor.

Cisco plans to add an internal card to the 1720 next year that will provide hardware-based encryption at up to T-1/E-1 speeds, the company says.

The device also supports quality-of-service features such as weighted fair queuing and committed access rate.

Onboard dynamic RAM is 16M bytes, expandable to 48M bytes. Flash RAM is 4M bytes, expandable to 16M bytes.

The 1720 with IP software and a T-1/E-1 serial WAN interface card costs \$2,195 and will be available later this month.

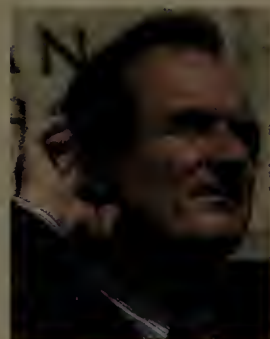
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## CORRECTIONS

Due to a misunderstanding over a survey question, Foundry Networks incorrectly reported the aggregate wire-speed throughput of its BigIron 8000 switch for the Backbone Switch Buyer's Guide (NW, Oct. 19, page 75). The switch has a capacity of 96 million packet/sec when outfitted with Gigabit Ethernet modules. If outfitted only with 10/100 bit/sec modules, its capacity is 27 million packet/sec. Also, due to an editing error, the number of Gigabit Ethernet ports required to fully load the BigIron 8000 backplane was misstated. The switch's 64 Gigabit Ethernet ports can deliver 96 million packet/sec.

Due to inaccurate information supplied by Nortel Networks' Bay Networks division, the same story contained an error regarding Bay's Accelar 1200 switch. The switch does offer a redundant switching fabric.

AP PHOTO/TYLER MALLORY



DOJ's Boies hopes for a good hearing.



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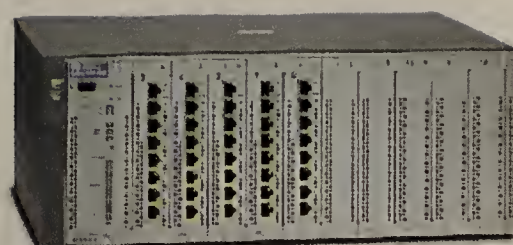
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# Start-up switch targets carrier costs

By Tim Greene  
Westford, Mass.

At its coming out party this week, well-funded start-up Castle Networks will outline its vision of what carrier services will look like in the not-too-distant future.

The carrier equipment maker's vision includes allowing roaming cell phone customers to join videoconferences and enabling users to

configure T-1 channels without carrier assistance.

Castle also sees a time when carrier networks will be anchored by relatively inexpensive data network gear that will enable carriers to offer services at lower prices than they can via their current networks.

Castle, armed with \$18 million in venture funding, is working on a switch for local carriers that will act as a mediator

between traditional circuit-switched voice networks and packet networks. Castle plans to introduce the switch in January.

Company officials say the Castle switch will be able to translate signaling and management information as well as traffic between voice and data networks. So, for example, customers buying IP phone service will be able to get features such as caller ID because the Castle

box will be able to access intelligent calling features that are part of the current public switched voice network.

Such sharing of features between networks is not possible today.

"Just try making a 911 call from your PC. It can't be done. That's because the [911 intelligence] is up there in the circuit-switched world," says Frank Dzubeck, president of Communications Network Architects in Washington, D.C.

The Castle box will substitute for a voice switch in competitive carriers' networks at a fraction of the cost. Castle's switch will cost \$150,000, while a Class 5 voice switch typically costs more than

## PROFILE: CASTLE NETWORKS

**Located:** Westford, Mass.

**Founded:** September 1997

**Products:** Yet-to-be-announced switch to mediate between carrier voice and data switches.

**Employees:** 50

**Funding:** Total of \$18 million from Venrock Associates, Bessemer Venture Partners, St. Paul Venture Capital, Atlas Venture.

**Competitors:** Ascend, Cisco, Accelerated Networks.

**Fun fact:** The architecture for Castle's forthcoming switch was first drawn on a pizza box, which now resides in the company's archives.

## IBM

Continued from page 1

current servers, Bradicich says.

In a nutshell, Future I/O will take mainframe channel connectivity technology and make it part of Netfinity's external adapter and internal I/O design.

Bradicich says the mainframe channel I/O technology uses an

2001, Bradicich says. Adapters conforming to the latest IBM PCI bus architecture — PCI-X — will be compatible with the Future I/O technology. But most PCI-X products won't be available until late 1999.

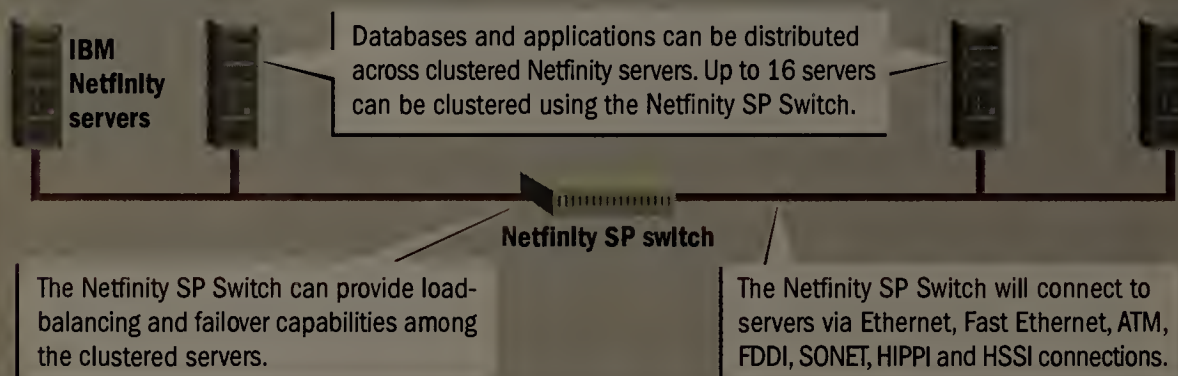
Still, any improvement in I/O performance is good news to at least one user, Todd Dion, vice president of technology at Tutor Time Learning Systems, a chain of child-care facilities

IBM offers today for its RS/6000 family, will tie together between eight and 16 servers as a clustered system. Currently, PC servers are generally limited to two- to four-way clusters.

While exact details of the SP Switch are sketchy, the device should support Ethernet, Fast Ethernet and ATM links. The SP Switch also has load-balancing features that will let it direct traffic to the least busy Netfinity

## NETFINITY SP SWITCH TO HANDLE HIGH-END SERVER CLUSTERING

IBM will bring the clustering capabilities of the RS/6000 SP Switch to the Intel platform, meaning:



internal switching fabric to route around bottlenecks so there is no single point of congestion. In comparison, PCI bus technology offers a single pipeline for data to flow through to the network, so if the pipe becomes congested, server performance quickly suffers.

With the emergence of larger applications and faster LAN technology, such as Gigabit Ethernet, today's servers will increasingly become bottlenecks, Bradicich says. With Future I/O technology Netfinity servers will be able to support more users and run bigger applications.

The drawback is that Future I/O — which will be implemented by using cards that fit into Netfinity slots — won't be available until sometime between late 2000 and early

in Boca Raton, Fla. Bottlenecks in the server are "always an issue," he says. In his data center are about 150 users and eight Netfinity servers. The servers run corporate accounting applications.

"Our corporate center users can benefit from an increase in I/O performance," he says. He also hopes that IBM will be able to successfully get this future channel I/O technology accepted by regulating bodies. "I like to keep the system as open as possible so I can plug in as many applications as possible and keep running multiple vendors' products," he says.

In the near term, Bradicich says IBM will roll out a Netfinity SP Switch, a dedicated, high-bandwidth server-clustering device. The SP Switch, which

server in the cluster. Included with the SP Switch will be management software that will help users set up and control the data in the cluster.

The idea is that by strapping together Netfinity servers, users would have more system uptime and server failover capabilities. Because Netfinity servers run Windows NT, users would have the option of building large NT clusters and supporting large NT applications as that operating system becomes more popular.

IBM says its DB2 database, Lotus' Domino and Oracle applications will be able to run on SP Switch clusters. ■

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## Bad card snags NYSE net

By Jim Duffy  
New York

A network outage at the New York Stock Exchange last Monday interrupted trading for an hour.

The culprit proved to be a malfunctioning router line card used to connect Tandem mainframes to Hewlett-Packard servers, says Bill Bautz, chief technology officer at the NYSE. The outage interrupted trading at 1:16 p.m., and the NYSE restored service at 2:15 p.m.

"We had a bad card, and it sent data streaming throughout the network," Bautz says. "It essentially flooded the network with random data."

The data flood made it tough for the exchange to identify the box housing the card at the root of the problem, Bautz says. That delayed the exchange's efforts to determine exactly what the problem was, he adds.

The NYSE housed the router card in an older device scheduled to be replaced within the next two to three weeks, according to the NYSE. Bautz declined to identify the device's manufacturer, but Newbridge Networks fingered one of its own Ungermann-Bass Access One Ethernet concentrators as the offender.

Newbridge, which bought

UB Networks last year, says a faulty Ethernet bridge module flooded the NYSE network with error broadcasts.

"It initially looked like operator intervention had powered down the card, but it was later found out that the card had failed," a Newbridge spokesman says. "It had been there in the network running flawlessly for five years and was back up and running within 15 minutes."

If the entire concentrator was knocked off-line instead of just a line card, redundant systems would have backed the concentrator up and trading would not have been interrupted, Bautz says.

Three hundred forty million shares traded hands before the outage, a NYSE spokesman says. Trading ended Monday with just under 610 million shares exchanged, which the spokesman says made for a relatively light day.

NYSE is in the process of upgrading its network with Layer 3 switches (NW, Aug. 17, page 51). In addition to UB hubs, NYSE uses Backbone Node routers from Nortel Networks' Bay Networks division.

NYSE is installing Bay's Accelar Layer 3 switches in its upgrade. ■



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## Briefs

■ **Dell** last week announced a high-end PC server with a small form factor called the PowerEdge 6350.

Dell is aiming the 6350 at ISPs or large corporate enterprises that run online transaction processing, messaging and



Dell's 6350 is small but powerful.

data warehousing applications. Depending on configuration, this machine sports up to four 400-MHz Intel Pentium II Xeon chips, 4M bytes of cache, 4G bytes of error checking and correcting memory, 27G bytes of internal storage and seven hot-plug PCI slots. However, the box is less than seven inches tall, allowing users to stack 10 in a standard server rack.

The 6350 starts at \$7,694 and is available now.

© Dell: (800) 388-8542

■ **Boulder, Colo., storage tape manufacturer Spectra Logic** will announce a new **Fibre Channel tape library** device for use in storage-area networks (SAN). The device, called the 10000F Tape Library, comes with an internal bridge that translates Fibre Channel protocols into SCSI.

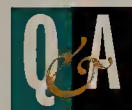
The bridge, which runs at 100M bit/sec, fits directly into a slot in the storage device such as a network card, and allows the library to attach directly to the SAN. Spectra claims the product is specially designed to handle the large packets of data required to exploit high-speed tape drives. The Fibre Channel library starts at \$20,000 and is available now.

Users of existing Spectra 10000 libraries can upgrade their devices by purchasing the Fibre Channel controller for \$1,700.

© Spectra: (800) 833-1132

## Schmidt: Laser-like focus on boosting NDS

Novell CEO discusses future of directories, network applications and industry competition.



Most news coming out of Novell these days concerns the company's Novell Directory Services (NDS). CEO Eric Schmidt recently sat down with *Network World* Editor John Dix, Features Editor Paul Desmond and Senior Editor Christine Burns to explain why the company's singular focus is a good thing for Novell and its customers.

**Will Novell be toast if NDS doesn't gain market acceptance?**

Why put it in the negative? NDS is working. We have 40 million users of the directory. There are approximately zero [Microsoft] Active Directory users. We have majority market share of NetWare against NT. Our unit sales are growing, as are NT Server's. NT is good in some things. We are good in others. It's called competition. But customers make choices based on what they can purchase today. If you wait for products to arrive, you may be waiting a long time.

**How big an opportunity does NDS represent?**

It's clearly as big as the SQL database opportunity of 15 years ago, which is now worth \$80 billion. The long-term principle is we build our business model around applications that use the directory. What kind of applications will be directory-enabled? What are the set of problems that you have on your network? You can't find things. You can't manage stuff. You can't do software distribution. You have no idea how many software licenses you have. You can't find people. You can't do instant messaging. You can't do



certificate revocations. All these functions change in the presence of the directory.

**Are you frustrated by the fact that there is so much head-to-head comparison between NDS and Active Directory, which hasn't shipped yet?**

Sure. It seems obvious to

me. Let's compare shipping products to shipping products. When Active Directory ships — which I am sure it will — then we will have a proper comparison.

**You're fighting an amazing perception battle, the perception being that you're losing ground to Microsoft. How do you combat that?**

It takes a long time to change the conventional wisdom about a company that has been beaten up as badly as Novell has. I mean, how many quarters of rising revenue, rising profits, successful products would it take to get a positive

story written about us? It takes a long time.

When I hear talk of users swapping out NetWare for NT, it sounds to me more like a sales problem than anything else. When we have sales coverage, we keep customers and they make big investments in us. In the historic channel model the only choice was Novell, so we didn't have to go in there and sell really hard. Now we do.

**Is there urgency in terms of how quickly NDS ubiquity has to happen?**

When I showed up I wanted everything done right away. But I quickly figured out that there is a rate at which organization changes. *See Schmidt, page 71*

## Switches spring from new sources

By Jeff Caruso

Ethernet switches from some unexpected vendors have been popping up recently.

3M, Hitachi and D-Link have helped reinforce the commodity status of LAN switches by unveiling low-priced products. 3M announced switches centered on its new Volition fiber-optic technology; Hitachi introduced a Fast Ethernet switch called the HiSpeed 170; and D-Link unwrapped Fast Ethernet switches at \$83 per port.

Newcomers Hitachi and 3M are able to break into the LAN switch market because the technology to make switches with basic functions is very well-known, says Mary Petrosky, an independent technology analyst in San Mateo, Calif. "It's not rocket science to make an Ethernet switch," she points out.

But Petrosky adds that the switches won't be for everyone. Most large enterprises want to form long-term relationships with vendors that have broad product lines. Vendors' end-to-

end capabilities will become more important as large users roll out new network services, such as quality-of-service guarantees for voice and data, Petrosky says.

Hitachi's internetworking division in Santa Clara, Calif., is targeting a street price for the HiSpeed 170 starting at less than \$95 per port. The switch



D-Link's Fast Ethernet switch supports 5.5G bit/sec of throughput.

supports 4.2G bit/sec of throughput and will ship in slightly different configurations. The base model has 24 ports of 10/100M bit/sec Ethernet and will ship this month for \$2,995.

Two other models with two Gigabit Ethernet uplinks will ship by the first quarter of next year.

3M's telecom systems division in Austin, Texas, is basing

its Fast Ethernet switch on its cost-lowering VF-45 technology, a fiber-optic interface that allows twice as many connections in a given space as previous interfaces.

The technology is similar to another new fiber-optic interface, MTRJ, developed primarily by Hewlett-Packard. HP and 3M are competing to get their respective interfaces accepted by other switch vendors.

3M's Volition Fast Ethernet switch has 16 ports. It can be managed via a Web interface or SNMP and will ship in December for \$286 per port. The 10M bit/sec version has 24 ports and will ship this month for \$138 per port.

D-Link of Irvine, Calif., unveiled a 24-port 10/100 switch with 5.5G bit/sec of throughput that can be managed via SNMP and Remote Monitoring. The DES-3224 will ship next month for \$83 per port.

© Hitachi: (800) 448-2244; 3M: (800) 364-3577; D-Link: (800) 326-1688

Get more online:

• A streaming-video broadcast of Schmidt's Interop keynote.

www.nwfusion.com





## Everything old is new again

**W**hile it's a truism that there's nothing new under the sun, it's still possible to find new ways to do old things. A

good example is Israeli vendor Ericom Software. In 1993, when Ericom was founded by Eran Heyman, the last thing

the computer world needed was another terminal emulation program. But Heyman knew he could do it better. And he did. Five years later, sales of his PowerTerm family of products puts Ericom right up there alongside Hummingbird, WRQ and IBM in total volume of sales.

PowerTerm got there by focusing on

two key issues — one old, one new.

The new issue was user-friendliness. Heyman saw that terminal emulators hadn't changed much since the mid-'80s. For PC users, Windows 95 versions looked like Windows 3.1 versions, which looked like DOS versions. The biggest change was using a white screen rather than a blue one.

Ericom developed a Windows interface into which was placed all of the expected terminal features, rather than taking a terminal emulator and dressing it up as a Windows application. One example is keyboard remapping. It's a necessary evil to give users with PC keyboards the ability to interact with host systems expecting different key codes. The old way was to create keyboard remapping files or ship a limited number of keyboard maps with the product. PowerTerm, on the other hand, features a drag and drop interface — one window shows the standard keyboard layout the host expects while another shows the PC keyboard layout. Drag a key from the host window to the PC window, and it's remapped to any key you drop it on.

**Dave Kearns**

The old issue PowerTerm focused on was program size. In today's market, in which every application seems to grow bigger with each new version, PowerTerm has the smallest footprint of any of the major terminal emulation products by a wide margin — 2M bytes vs. 20M to 30M bytes for the competition. This allows Ericom to quickly port the product to the newest mobile computing platform, Windows CE. This makes PowerTerm a great tool for today's increasingly mobile work force. As more CE devices become available — the CE-based cell phone, for example — PowerTerm becomes a key weapon for the road warrior in the fight against the competition.

*Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at [wired@uquill.com](mailto:wired@uquill.com).*

### Tip of the week

While Microsoft and Cisco have talked long and hard about directory-enabling your network, Novell and Lucent are doing something about it. Lucent's high-capacity Cajun P550 Switch — a Layer 2 switching, Layer 3 routing Ethernet platform — is about to be Novell Directory Services-enabled. This way, a network administrator could, for example, allocate priority bandwidth to an individual user or to a mission-critical application. Get the details at [www.novell.com/press/archive/1998/10/pr98125.html](http://www.novell.com/press/archive/1998/10/pr98125.html).

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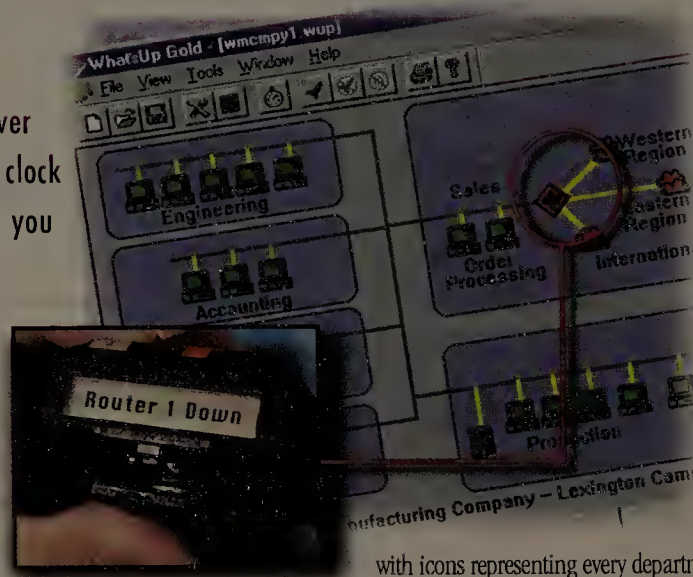


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# Is putting out network fires burning you out?

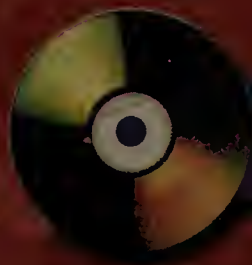
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## 1. What is the principal business activity at your location?

(check ONE only)

01. ☐ Manufacturing (other)  
02. ☐ Finance/Banking  
03. ☐ Insurance/Real Estate/Legal  
04. ☐ Health Care Services  
05. ☐ Hospitality/Entertainment/  
Recreation  
06. ☐ Media/TV/Cable /Radio/Print  
07. ☐ Retail/Wholesale Trade/  
Business Services  
08. ☐ Transportation  
09. ☐ Utilities

10. ☐ Education  
11. ☐ Process Industries  
(Mining/Construction/Petroleum  
Refining/Agriculture/Forestry)  
12. ☐ Government (Federal/State/Local)  
13. ☐ Military  
14. ☐ Aerospace  
15. ☐ Consulting (Independent)\*  
16. ☐ Carriers/Interconnects  
17. ☐ Internet Service Provider (ISP)

18. ☐ Manufacturing (Computer/  
Communications/OEM)  
19. ☐ Resellers of Computer/Network  
Products (VARs, VADs)  
20. ☐ Systems/Network Integrators\*  
21. ☐ Distributors (Computer/  
Communications)\*  
22. ☐ Other (please specify)

\* Please complete form based on largest client.

## 2. What is your job function?

(check ONE only)

### NETWORK IS MANAGEMENT:

1. ☐ Network Management  
2. ☐ LAN Management  
3. ☐ Datacom/Telecom Management

4. ☐ IS/IT/MIS/CIO/Systems Management  
5. ☐ Internet/Intranet/Electronic  
Commerce Mgmt., Webmaster  
6. ☐ Engineering Management

7. ☐ Corporate Management (CED,  
Pres., VP, Dir., Mgr., Financial  
Management)  
8. ☐ Consultant (Independent)  
9. ☐ Other

## 3. What is the estimated value of Network equipment and services that you specify, recommend or approve the purchase of?

(Please print the appropriate number code on the line next to each product category. Please complete ALL categories A-N.)

1. \$100 Million or more  
2. \$50 Million to \$99.9 Million  
3. \$25 Million to \$49.9 Million  
4. \$10 to \$24.9 Million  
5. \$1 to \$9.9 Million  
6. \$100,000 to \$999,999  
7. \$50,000 to \$99,999  
8. Under \$50,000  
9. None of the above

- A. ☐ Large Systems  
(Mainframes/Minis)  
B. ☐ Desktops  
(Micros/Laptops/Workstations)  
C. ☐ Servers  
D. ☐ LANs  
E. ☐ WAN Equipment  
F. ☐ Carrier Services

- G. ☐ Internetworking  
H. ☐ Internet  
I. ☐ Intranet  
J. ☐ Extranet  
K. ☐ Remote Access  
L. ☐ Peripherals  
M. ☐ Software  
N. ☐ Service/Support

## 4. What is the total number of sites for which you have purchase influence?

(check ONE only)

1. ☐ 100+ 2. ☐ 50 - 99 3. ☐ 20 - 49 4. ☐ 10 - 19 5. ☐ 2 - 9 6. ☐ 1 7. ☐ None

## 5. What is the total number of Servers/Clients/LANs installed/planned at your location/in your entire organization?

(check ONE box in each column)

SERVERS		CLIENTS		LANs	
At Location	Entire Org.	At Location	Entire Org.	At Location	Entire Org.
A	B	C	D	E	F
<input type="checkbox"/> 1. 50,000+	<input type="checkbox"/>	<input type="checkbox"/> 1. 50,000+	<input type="checkbox"/>	<input type="checkbox"/> 1. 50,000+	<input type="checkbox"/>
<input type="checkbox"/> 2. 10,000 to 49,999	<input type="checkbox"/>	<input type="checkbox"/> 2. 10,000 to 49,999	<input type="checkbox"/>	<input type="checkbox"/> 2. 10,000 to 49,999	<input type="checkbox"/>
<input type="checkbox"/> 3. 1,000 to 9,999	<input type="checkbox"/>	<input type="checkbox"/> 3. 1,000 to 9,999	<input type="checkbox"/>	<input type="checkbox"/> 3. 1,000 to 9,999	<input type="checkbox"/>
<input type="checkbox"/> 4. 100 to 999	<input type="checkbox"/>	<input type="checkbox"/> 4. 100 to 999	<input type="checkbox"/>	<input type="checkbox"/> 4. 100 to 999	<input type="checkbox"/>
<input type="checkbox"/> 5. 50 to 99	<input type="checkbox"/>	<input type="checkbox"/> 5. 50 to 99	<input type="checkbox"/>	<input type="checkbox"/> 5. 50 to 99	<input type="checkbox"/>
<input type="checkbox"/> 6. 10 to 49	<input type="checkbox"/>	<input type="checkbox"/> 6. 10 to 49	<input type="checkbox"/>	<input type="checkbox"/> 6. 10 to 49	<input type="checkbox"/>
<input type="checkbox"/> 7. 1 to 9	<input type="checkbox"/>	<input type="checkbox"/> 7. 1 to 9	<input type="checkbox"/>	<input type="checkbox"/> 7. 1 to 9	<input type="checkbox"/>
<input type="checkbox"/> 8. none	<input type="checkbox"/>	<input type="checkbox"/> 8. none	<input type="checkbox"/>	<input type="checkbox"/> 8. none	<input type="checkbox"/>

## 6. What is your scope and involvement in purchasing decisions for network products and services for your enterprise?

### A. Scope (check one only)

1. ☐ Corporate/Enterprise  
2. ☐ Department  
3. ☐ None

### B. Involvement (check ALL that apply)

1. ☐ Create Network Strategy  
2. ☐ Recommend/Specify  
3. ☐ Approve  
4. ☐ Evaluate  
5. ☐ Determine the Need  
6. ☐ None

## 7. What is the estimated number of employees at your location/in entire organization?

(check ONE in each section)

### A. At your location:

1. ☐ Over 20,000  
2. ☐ 10,000 - 19,999  
3. ☐ 5,000 - 9,999  
4. ☐ 2,500 - 4,999  
5. ☐ 1,000 - 2,499  
6. ☐ 500 - 999  
7. ☐ 250 - 499  
8. ☐ 249 or less

### B. Entire organization:

1. ☐ Over 20,000  
2. ☐ 10,000 - 19,999  
3. ☐ 5,000 - 9,999  
4. ☐ 2,500 - 4,999  
5. ☐ 1,000 - 2,499  
6. ☐ 500 - 999  
7. ☐ 499 or less

8.

Please indicate the products/services that you are currently involved in purchasing or plan to purchase: (check ALL that apply)

A. Currently involved in purchasing

B. Plan to purchase

### INTERNET/INTRANET

- A ☐ 01. ☐ Internet Services/Web Hosting  
B ☐ 02. ☐ Firewalls/Security/Encryption  
C ☐ 03. ☐ Web Servers/Software  
D ☐ 04. ☐ Web Servers/Hardware  
E ☐ 05. ☐ TCP/IP Software  
F ☐ 06. ☐ Management/Monitoring Software

- A ☐ 07. ☐ Voice/Video Over IP  
B ☐ 08. ☐ VPN Equipment/Services  
C ☐ 09. ☐ Legacy Integration Tools  
(Web to Host)  
D ☐ 10. ☐ Web Development Tools (JAVA,  
ActiveX, etc.)  
E ☐ 11. ☐ Push Technology

- A ☐ 12. ☐ Web Browsers  
B ☐ 13. ☐ Intranet Applications/Groupware  
C ☐ 14. ☐ Search/Retrieval Products  
(web crawler)  
D ☐ 15. ☐ Electronic Commerce Tools  
E ☐ 16. ☐ Web Authoring Tools  
F ☐ 17. ☐ Other

### LOCAL-AREA NETWORKS/ INTERNETWORKING

- A ☐ 18. ☐ Local-Area Networks  
B ☐ 19. ☐ Network Operating System  
Software  
C ☐ 20. ☐ Servers  
D ☐ 21. ☐ Print Servers  
E ☐ 22. ☐ Routers  
F ☐ 23. ☐ ATM Switches  
G ☐ 24. ☐ Token-Ring Switches  
H ☐ 25. ☐ Ethernet Switches  
I ☐ 26. ☐ Fast Ethernet  
J ☐ 27. ☐ Gigabit Ethernet

- A ☐ 28. ☐ Layer 3 Switches  
B ☐ 29. ☐ Network Storage Devices  
(NAS, SANs)  
C ☐ 30. ☐ LAN Storage/Backup  
D ☐ 31. ☐ Optical Storage/Backup/  
Jukeboxes  
E ☐ 32. ☐ Disk Storage/Backup  
F ☐ 33. ☐ Tape Storage/Backup  
G ☐ 34. ☐ RAID Storage/Backup  
H ☐ 35. ☐ Network Test/Diagnostic Tools  
I ☐ 36. ☐ Cables, Connectors, Baluns

- A ☐ 37. ☐ UPS  
B ☐ 38. ☐ Network Interface Cards (NICs)  
C ☐ 39. ☐ Hubs  
D ☐ 40. ☐ Intelligent Hubs  
E ☐ 41. ☐ Stackable Hubs  
F ☐ 42. ☐ Bridge/Router  
G ☐ 43. ☐ SNMP Network Management  
H ☐ 44. ☐ Gateways  
I ☐ 45. ☐ Concentrators/Repeaters  
J ☐ 46. ☐ Other (please specify)

### COMPUTERS/PERIPHERALS

- A ☐ 47. ☐ Thin Clients/Network  
Computers (NCs)  
B ☐ 48. ☐ Laptops/Notebooks/Sub-Notebooks  
C ☐ 49. ☐ Micros/PCs

- A ☐ 50. ☐ Minis  
B ☐ 51. ☐ Mainframes  
C ☐ 52. ☐ Workstations  
D ☐ 53. ☐ Printers/Network Printers

- A ☐ 54. ☐ CD-ROM/DVD  
B ☐ 55. ☐ Fax/Modem Boards  
C ☐ 56. ☐ Memory/Chips/Boards/Cards  
D ☐ 57. ☐ Other

### REMOTE/WIRELESS COMPUTING

- A ☐ 58. ☐ Remote Access Products  
B ☐ 59. ☐ Remote Access Services  
C ☐ 60. ☐ PDAs

- A ☐ 61. ☐ PCMCIA Devices  
B ☐ 62. ☐ Wireless Data  
Equipment/Services

- A ☐ 63. ☐ Cellular Equipment & Services  
B ☐ 64. ☐ Other (please specify)

### SOFTWARE/APPLICATIONS

- A ☐ 65. ☐ Network Management  
B ☐ 66. ☐ Systems Management  
C ☐ 67. ☐ Security  
D ☐ 68. ☐ Communications Software  
E ☐ 69. ☐ Terminal Emulation  
F ☐ 70. ☐ Operating Systems  
G ☐ 71. ☐ Applications Development Tools  
H ☐ 72. ☐ Database Management/ RDBMS  
I ☐ 73. ☐ Groupware  
J ☐ 74. ☐ Workflow

- A ☐ 75. ☐ EDI  
B ☐ 76. ☐ E-mail  
C ☐ 77. ☐ Desktop Videoconferencing  
D ☐ 78. ☐ Imaging  
E ☐ 79. ☐ Suites/Server Suites  
(Back Office, etc.)  
F ☐ 80. ☐ Middleware  
G ☐ 81. ☐ Document Management  
H ☐ 82. ☐ Site Metering Tools  
I ☐ 83. ☐ Computer Telephony  
Integration (CTI)

- A ☐ 84. ☐ Data Warehousing  
B ☐ 85. ☐ Anti Virus Software  
C ☐ 86. ☐ Multimedia  
D ☐ 87. ☐ Yr. 2000 Conversion  
Software (Y2K)  
E ☐ 88. ☐ Helpdesk  
F ☐ 89. ☐ Web Based Management Tools  
G ☐ 90. ☐ Directory Services  
H ☐ 91. ☐ Other (please specify)

### WIDE-AREA NETWORK EQUIPMENT & SERVICES

- A ☐ 92. ☐ 56 Kbps Modems  
B ☐ 93. ☐ Under 56 Kbps Modems  
C ☐ 94. ☐ Cable Modems  
D ☐ 95. ☐ Asynchronous Transfer  
Mode (ATM)  
E ☐ 96. ☐ Frame Relay Equipment/  
Services  
F ☐ 97. ☐ ISDN Equipment & Services  
G ☐ 98. ☐ FT-1/T-1/T-3 Multiplexers/Services

- A ☐ 99. ☐ xDSL Services/Products  
B ☐ 100. ☐ Diagnostic/Test Equipment  
C ☐ 101. ☐ DSL/CSU  
D ☐ 102. ☐ PBXs  
E ☐ 103. ☐ Videoconferencing  
F ☐ 104. ☐ Leased Lines  
G ☐ 105. ☐ Switched Data  
H ☐ 106. ☐ Virtual Private Networks (VPN)  
I ☐ 107. ☐ FRADs

- A ☐ 108. ☐ Managed LAN/Router Services  
B ☐ 109. ☐ Other  
C ☐ 110. ☐ Outsourcing/Systems  
Integration Services  
D ☐ 111. ☐ Education/Training Services  
E ☐ 112. ☐ None of the above (1-111)

9.

Please indicate the platforms that are currently installed/planned: (check ALL that apply)

A. Currently installed

B. Planned for purchase

### NETWORK PROTOCOLS

- A ☐ 01. ☐ TCP/IP  
B ☐ 02. ☐ IPv6  
C ☐ 03. ☐ SNA

- A ☐ 04. ☐ Novell IPX/SPX  
B ☐ 05. ☐ APPC/APPN/LU 6.2  
C ☐ 06. ☐ NETBIOS

- A ☐ 07. ☐ NFS  
B ☐ 08. ☐ SNMP  
C ☐ 09. ☐ Other

### LAN ENVIRONMENT

- A ☐ 10. ☐ Gigabit Ethernet  
B ☐ 11. ☐ Switched Ethernet  
C ☐ 12. ☐ Fast Ethernet (100 Megabit  
Ethernet)  
D ☐ 13. ☐ Ethernet

- A ☐ 14. ☐ ATM  
B ☐ 15. ☐ Token Ring/Token Ring  
Switching  
C ☐ 16. ☐ IP Switching  
D ☐ 17. ☐ Layer 3 Switching

- A ☐ 18. ☐ FDDI  
B ☐ 19. ☐ 100Base-T  
C ☐ 20. ☐ 10Base-T  
D ☐ 21. ☐ Fibre Channel  
E ☐ 22. ☐ Other

### NETWORK OPERATING SYSTEM

- A ☐ 23. ☐ Windows NT  
B ☐ 24. ☐ Windows NT/Advanced Server  
C ☐ 25. ☐ Novell IntranetWare  
D ☐ 26. ☐ Novell (NetWare 5.X)

- A ☐ 27. ☐ Novell (NetWare 4.X)  
B ☐ 28. ☐ Novell (NetWare 2.X, 3.X)  
C ☐ 29. ☐ Microsoft (LAN Manager)  
D ☐ 30. ☐ Banyan (VINES)

- A ☐ 31. ☐ IBM (Server)  
B ☐ 32. ☐ Other (please specify)

### COMPUTER OPERATING SYSTEM

- A ☐ 33. ☐ NT Server  
B ☐ 34. ☐ NT Workstation  
C ☐ 35. ☐ Unix/Xenix/AIX/SCO  
D ☐ 36. ☐ Solaris  
E ☐ 37. ☐ Windows

- A ☐ 38. ☐ Windows 95  
B ☐ 39. ☐ Windows 98, .9x  
C ☐ 40. ☐ DOS  
D ☐ 41. ☐ OS/2, OS/2 Warp  
E ☐ 42. ☐ IBM MVS/VM/VSE

- A ☐ 43. ☐ Digital VMS  
B ☐ 44. ☐ Macintosh  
C ☐ 45. ☐ Other  
D ☐ 46. ☐ None of the above (1-45)

10.

Which of the following Servers/Clients do you have installed/planned at your location?

(check ALL that apply in each column)

A. Servers		B. Clients		A. Servers		B. Clients	
Power PC	<input type="checkbox"/>	01. <input type="checkbox"/>		486, 386, 286	<input type="checkbox"/>	07. <input type="checkbox"/>	
Power Mac	<input type="checkbox"/>	02. <input type="checkbox"/>		Sun Sparc	<input type="checkbox"/>	08. <input type="checkbox"/>	
Mac Other	<input type="checkbox"/>	03. <input type="checkbox"/>		Risc	<input type="checkbox"/>	09. <input type="checkbox"/>	
Multiprocessor Servers	<input type="checkbox"/>	04. <input type="checkbox"/>		Alpha	<input type="checkbox"/>	10. <input type="checkbox"/>	
Pentium II (PII)	<input type="checkbox"/>	05. <input type="checkbox"/>		Other	<input type="checkbox"/>	11. <input type="checkbox"/>	
Pentium/Pentium Pro	<input type="checkbox"/>	06. <input type="checkbox"/>					

11.

Which of the following hardware platforms are installed/planned in your company?

(check ALL that apply)

### A - Mainframes (Large Scale)

1. ☐ IBM  
2. ☐ Amdahl  
3. ☐ Cray  
4. ☐ Hitachi  
5. ☐ Unisys  
6. ☐ Other

### B - Minis (Midrange)

1. ☐ IBM RS/6000  
2. ☐ IBM AS/400  
3. ☐ Digital  
4. ☐ Tandem  
5. ☐ Unisys  
6. ☐ AT&T GIS  
7. ☐ H-P  
8. ☐ Data General  
9. ☐ Other

### C - Workstations

1. ☐ Sun Microsystems  
2. ☐ Silicon Graphics  
3. ☐ Digital  
4. ☐ H-P  
5. ☐ IBM  
6. ☐ Other

12.

What is the estimated gross revenue of your entire company/institution?

(check ONE only)

01. ☐ \$20 billion or more  
02. ☐ \$10 billion to \$19.9 billion  
03. ☐ \$1 billion to \$9.9 billion  
04. ☐ \$500 million to \$999.9 million  
05. ☐ \$100 million to \$499.9 million  
06. ☐ \$50 million to \$99.9 million  
07. ☐ \$10 million to \$49.9 million  
08. ☐ \$5 million to \$9.9 million  
09. ☐ \$4.9 million or less  
10. ☐ None of the above

13.

For which areas outside of North America do you have purchase influence?

(check ALL that apply)

1. ☐ Europe 2. ☐ Asia 3. ☐ South America 4. ☐ Australia 5. ☐ Middle East 6. ☐ None



Please indicate the names and job functions of other individuals at your location to whom you would like us to send a copy of **NetworkWorld**

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NAME \_\_\_\_\_ JOB FUNCTION \_\_\_\_\_

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NAME \_\_\_\_\_ JOB FUNCTION \_\_\_\_\_

NAME \_\_\_\_\_ JOB FUNCTION \_\_\_\_\_

## Be Sure You Have Completed the Following:

- ☒ Answered **ALL** the questions
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## Briefs

■ **Shiva** recently introduced a **scaled down version of its hardware for building virtual private networks (VPN)** across Internet connections. The *LanRover VPN Express* supports 50 simultaneous remote users calling in via the Internet. Designed for branch offices or small businesses, the box supports IP Security tunneling, digital certificates and 168-bit encryption. *LanRover* also has interfaces for 10/100M bit/sec Ethernet links. Shiva VPN Client software runs on Windows 95 PCs. Available by year-end, *LanRover VPN Express* will cost \$2,995, which includes 50 client licenses.

© Shiva: (800) 977-4482

■ **Multi-Tech** recently announced **MultiVOIP, a voice-over-IP gateway** for remote offices. The point-to-point device is designed to cut phone costs between offices connected by a



Multi-Tech's MultiVOIP: made to lower phone bills

data link by running voice over the same line.

The biggest savings come from using two voice channels to handle international phone calls. With compression, each call uses 6.3K bit/sec of bandwidth. Available now, MultiVOIP costs \$1,549.

© Multi-Tech: (800) 328-9717

■ **IBM** last week announced the availability of network interface cards for its 3746 Multi Access Enclosure (MAE) that will let users link the controller with older mainframes that support bus and tag channel connections and run IP. The parallel channel adapter boards will fit into MAEs, which can support up to four cards.

© IBM: (800) 467-4968

## Is there a 'Net QoS standards standoff?

By Jim Duffy  
Atlanta

Are two Internet Engineering Task Force working groups advancing at cross purposes with regard to quality of service (QoS)?

A debate has arisen about whether the IETF's Multiprotocol Label Switching (MPLS) and Differentiated Services (Diff-Serv) efforts are competing to accomplish the same goal of equipping the Internet to deliver QoS.

Some say competition between the working groups threatens to deprive users of Internet QoS; others say the efforts are mutually exclusive and shrug off the competition as standard operating procedure within the IETF.

"There's a certain creative tension between the groups," says Paul Doolan, chief technical officer at Ennovate Networks and a co-author of the MPLS specification.

"I think creative tension might be a more forgiving way of putting it," says Tom Nolle, president of telecommunica-

tion consultancy CIMI Corp. of Voorhees, N.J. "The current standards polarization . . . absolutely could poison almost every advanced application of the Internet."

MPLS is designed to help scale the Internet by introducing circuit-switching techniques to a packet-switched, connectionless environment. MPLS adds a "label" to IP packets that steers that traffic through the Internet over predefined routes.

MPLS helps scale the Internet by alleviating the need for each router and switch in a packet's path to perform address lookups. MPLS also provides more deterministic, or predictable, performance, which is essential for guaranteeing QoS.

Diff-Serv is intended to deliver different levels of QoS to different applications. Diff-Serv proposes using the type of service (ToS) bits in an IP header to assign QoS classifications to different traffic based on service-level agreements hammered out between users and service providers.

Diff-Serv and MPLS are con-

### QoS 101

#### How Diff-Serv and MPLS work

##### MPLS

- Works at Layer 2.
- Designed to help scale the Internet by introducing circuit switching techniques to a packet-switched, connectionless infrastructure.
- Adds a label to IP packets that steers that traffic through the Internet over predefined routes.
- Alleviates the need for each router and switch in the packet's path to perform address lookups
- Provides more deterministic, or predictable, performance, which is essential for guaranteeing QoS.

##### Diff-Serv

- Works at Layer 3.
- Proposes using the Type of Service bits in an IP header to assign different QoS guarantees to different traffic.

sidered packet tagging techniques for delivering QoS. But Diff-Serv works at Layer 3 of the Open Systems Interconnection model, while MPLS works at Layer 2, meaning the efforts should be mutually exclusive of each other. MPLS can work fine with or without Diff-Serv, and vice versa.

"The basic point is that MPLS

and Diff-Serv are not trying to do the same thing," says Scott Bradner, a consultant with Harvard University's University Information Systems. "MPLS does intend to deal with a class of QoS issues, but that has not been its main thrust, which is traffic engineering. Diff-Serv's main function is to look at QoS issues and to create building blocks for QoS services. I do not see why we cannot figure out a way that Diff-Serv networks can make use of MPLS underlying networks."

MPLS devices might assign switching labels after reading Diff-Serv instructions in IP ToS headers. The issue, according to MPLS co-chair George Swallow, is whether Diff-Serv can use three bits in the MPLS label byte for this.

"The question for the current MPLS encapsulation is, 'Is eight bits enough?'" Swallow says. "If it is, then the [Diff-Serv markings] can be encoded in the three available bits. If not, we'll need a new encapsulation."

It may be this nuance that's sparking the firm stances some vendors are taking on MPLS and Diff-Serv. Ennovate's Doolan characterizes Diff-Serv as a "grand scheme" vis a vis MPLS, which he says is a "pragmatic attempt to build useful networks."

Xedia, a maker of IP switches  
See MPLS, page 24

## Lucent says hello to the 'unPBX'

PBX war horse unveils its first Windows NT call server.

By David Rohde  
Atlanta

You don't have to go to a start-up anymore to buy a PBX replacement system that runs on a Windows NT server.

At the recent NetWorld+Interop 98 show here, veteran PBX war horse Lucent jumped into the movement to replace proprietary PBXs with open call-processing servers that share LANs and WANs with data applications.

Lucent introduced IP Exchange Systems (IPES), a family of products that moves phone calls and faxes over a single IP enterprise network.

Lucent's initial entry in the IPES product line is for relatively small offices, leaving larger sites in the hands of tradi-

tional voice switch vendors.

The flagship of the new line is IP ExchangeComm, a system designed for sites with up to 96 telephones and fax machines. The system includes call-routing software for a Windows NT server, plus the Lucent IP Exchange Adapter, which converts phones and fax machines into IP clients. Exchange Adapters, small boxes that can sit on the desktop or in wiring closets, are available in versions that support two, four or eight telephony devices.

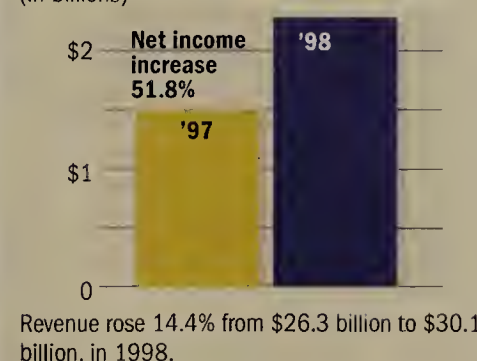
By placing IP ExchangeComm servers in multiple corporate locations, users can route intracompany calls over an IP WAN, cutting out carrier tolls. For users who want to originate calls from the system to locations outside their com-

See Lucent, page 24

### Top-line gain, bottom-line boom

Lucent's just-ended fiscal year showed a moderate gain in revenue but a big increase in net income\*:

(In billions)



Revenue rose 14.4% from \$26.3 billion to \$30.1 billion, in 1998.

\*Excludes one-time charges relating to several acquisitions.

SOURCE: LUCENT, MURRAY HILL, N.J.



INTERNETWORKING MONITOR

# 'Solutions-only' testing is no solution

**S**olutions, solutions, solutions. Echoing the real-estate agent's mantra of "location, location, location," network vendors have found that the invocation of solution resonates similarly with their customers.

So enamored of its power are some vendors, that they offer up solutions orientation as a rationale for avoiding participation in product benchmarking. Solutions, vendors say, are what they sell to customers, not boxes. Individual product performance, they add, doesn't matter and only solutions should be tested.

A solution, of course, is just a concept. In reality, it is nothing more than one or more component products arranged in such a way as to get a particular job done. To posit that solutions and components are diametrically opposed notions or that solutions testing and component testing are mutually exclusive is ludicrous. These are just transparent attempts at stonewalling a device testing process that might reveal inadequacies in component products. How, ask yourself, can you build a reliable solution without

knowing the actual capabilities of the system's components?

Solutions-only advocates would prefer we concern ourselves only with the high-level objectives and not get distracted by data on individual components. Such an approach flirts with disaster. Consider what occurred when space shuttle designers had inadequate data on the reaction of the booster O-rings to low temperatures. Atmospheric conditions chilled the launch pad just a little too much — beyond the tolerance

of a relatively simple component — and the result was the greatest loss of life since the inception of space exploration.

In stark contrast to the inadequate component cited above, the government is more frequently criticized for overbuying. Sometimes you read stories about things such as hammers that cost several hundred dollars each. Here, we can find a network analogy, too.

No network I've ever seen or heard of requires frame-processing rates in the tens of millions of pack-



Kevin Tolly

ets per second. Yet, we've already benchmarked devices that offer that. Might this be dramatically more than the solution requires? Surely. Is buying such a device the enterprise equivalent of requisitioning a \$500 hammer? Not necessarily.

While I do not dispute the fact that such products deliver more power than one needs today, the key point is whether network managers are overpaying for such performance. To that question, I believe the answer is no.

While solutions advocates might dispute my assertion, it is really up to them to provide a factual basis for their argument. Yes, 10 million packet/sec may be too much, but how much is enough?

If 30% system throughput on a 24-port Fast Ethernet switch is adequate for 90% of enterprise customers, then vendors should go on the record with statements to that effect. In fact, companies should employ modeling, simulation and testing to prove those points to network managers. Simply fleeing from device testing is no solution.

For their part, network managers should let vendors know whether benchmarking information related to specific components is valuable. I'm biased toward benchmarking, naturally, but I don't know how you make decisions without it.

*Tolly is president of The Tolly Group, a strategic consulting and independent testing firm in Manasquan, N.J. He can be reached at (732) 528-3300, ktolly@tolly.com or www.tolly.com.*

## CIM: Net management's best kept secret

By Jeff Caruso

It's not something a network manager is likely to see directly, but Common Information Model (CIM) technology has the potential to improve the way networks and systems are managed.

CIM defines a way to represent and exchange management data collected from any source, be it a router, server or desktop system. If the data is represented using CIM, any network management tool or application that understands CIM can analyze the data and make correlations between information coming from different locations in the net, uniting systems and network management under one umbrella standard.

The idea is that it should be possible to build applications using CIM data and run them across a variety of platforms from Compaq's Insite Manager, Hewlett-Packard's OpenView and Microsoft's SMS to Novell's ManageWise and Tivoli's Management Software.

The Desktop Management Task Force (DMTF) recently advanced the CIM standard by releasing the encoding specification for representing CIM data using Extensible Markup Language (XML). This means

applications can retrieve CIM data using the Web technology of XML (see story, page 41).

But many network managers don't even know about CIM, so they're not pressuring their vendors to support the standard, says Rick Sturm, principal of the Enterprise Management Institute. Without user demand, CIM has much less of a chance of being widely accepted, he says.

Sturm blames the DMTF for not actively educating the market about its standards. He says the DMTF's Desktop Management Interface (DMI) is a prime example of where the DMTF has fallen down in the past in telling the market about its standards. Although DMI is being implemented, rollout is happening slowly because users aren't demanding it, Sturm says.

There are two parts to CIM: the specification and the schema. The specification describes the language and naming conventions, as well as the process of mapping CIM data to SNMP management information bases and DMI management information files.

The schema describes how to format data specific to different management areas, such as systems and applications. The schema also allows for product-

specific extensions.

CIM technology could have a big impact on the management market if it were widely accepted, observers say.

Because any network management tool could have access to a broad range of management data through CIM, it seems likely that CIM would reduce the number of tools on the market, says Mark Bouchard, senior research analyst at META Group in Stamford, Conn. Managers would no longer need different tools to manage different kinds of networks and systems.

Because CIM isolates net managers from the complexity of their networks, managers won't have to base decisions about which network management platform to use based on the protocols used in the network.

Many vendors say they plan to support CIM by late next year. Microsoft is including CIM support in Windows NT 5.0. Cisco can export CIM-compliant data from CiscoWorks. HP can import CIM-compliant information into its AssetView asset management software.

Sturm hopes CIM can bring together management information. "CIM has the potential, but other things have had the potential and failed," he says. ■

## Lucent

Continued from page 23

pany, Lucent is offering an optional IP telephony gateway to connect the system to the public switched telephone network.

The gateway is basically a reverse of Lucent's current telephony gateways, which take ordinary PBX traffic and convert it into packets for transit over intranets or the Internet.

Several Lucent customers say they would test IP ExchangeComm. Challenge Dairy, a dairy-products distributor, will test the system for communications between its corporate headquarters in Dublin, Calif.,

and a branch office in Los Angeles. Network manager Eric Grosshans says he sees "terrific promise" on the cost savings involved in avoiding carrier tolls this way.

Lucent's product comes on the heels of Cisco announcing it is buying Selsius Systems, one of the pioneering companies in the field of LAN PBX replacement system, for \$145 million.

Most of the Lucent IPES systems are expected to be sold through indirect channels, including Lucent's partnership with Inacom, the large computer-products distributor. IP ExchangeComm is due to be available in the first quarter. Pricing was not available. ■

## MPLS

Continued from page 23

for ISPs, is squarely in the Diff-Serv camp, says company president Ashley Stephenson.

"MPLS is vendor-driven," Stephenson says. "In many ways, I think MPLS grew from the leftover IP switching, from Cisco's Tag Switching and from ATM being threatened by packet-over-fiber. So there's lots of vendor reasons why a lot of very smart people have got a lot invested in something like MPLS."

"MPLS and Diff-Serv compete for the same market," says Shai Herzog, founder of QoS

company IP Highway, and co-author of *Diff-Serv and the Resource Reservation Protocol*. "That market is the market that talks about end-to-end QoS delivery. It's not really a technology issue, it's a marketing issue." ■

Get more online:

- A page of QoS resources.
- A table comparing different approaches to label switching.
- Specifications and papers on MPLS and Diff-Serv.

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## Web management

# Can the Web be managed?

*Web management tools are only beginning to help.*



all it an expectation gap.

There's a big difference between what users think they can manage via the World Wide Web and what they actually can.

"People think Web management tools are further along than they are because Web development tools are so far along," says Sanjiv Gossain, chief technology officer at Cambridge Technology Partners, a large systems development consultancy in New York.

Vendors talk about policy-enabled Web management — which allows users to set parameters for thresholds, class of service, quality of service and type of service — but few are actually delivering products.

As customers wait for those products, network managers have to change the way they think about managing the network, experts say. First, they need to accept that the network no longer ends at the router. Intranets and extranets have changed that notion.

Second, traffic on the Web is constantly changing. What was true a few minutes ago — clear lanes, no traffic in sight — could change by the time you finish this sentence.

Third, Web applications are becoming critical to business users — maybe even more critical than their LANs. If your LAN goes down, you can have employees come in on the weekend, work nights, work from home, even work on paper, whatever it takes. But if an online company such as Amazon.com goes down for 36 hours — as it did earlier this year — it has no way to recover the lost business, says Steve Foote, an analyst at Hurwitz Group in Framingham, Mass. "That's amazingly expensive when you consider Amazon.com has no bookstores and couldn't process any new inbound orders," he says.

Situations like Amazon.com's make recoverability a big issue for Web management.

Another business with a mission-critical Web application is Charles Schwab. Almost 50% of Schwab's business is on E-Schwab, an application that lets users trade stocks online. And almost 60% of all online trading goes through Schwab, Foote says. How long could a company like that stay in business if it couldn't be relied upon to make trades when customers want them made?

*By Robin Schreier Hohman*

### There is some help

There are products out there that can help you manage your Web site. For example, Eventus Software checks the integrity of HTML links so you can make sure the pages you put into production are actually still connected to the server — yours or somebody

two copies of everything in our infrastructure, like Noah's Ark," jokes Jim Hourihan, vice president of marketing at Bright Tiger in Acton, Mass.

Resonate, a 3-year-old start-up in Mountain View, Calif., approaches resource management a little differently. The company's flagship product, Central Dispatch, sits on Web servers and acts as a traffic agent.

The software parcels out the hits among multiple servers and monitors response times.

Optimal Networks' application modules try to predict what the traffic will do. The software can help you decide if it's worth upgrading your WAN link to a T-1 line, says Laura Lilyquist, vice president of marketing at Optimal. Optimal Application Expert decodes all database calls and

### WHAT'S OUT THERE

**This is a sampling of Web site resource-management tools shipping now.**

Company	Product	What It Does
Bright Tiger Technologies	ClusterCATS	Monitors resource location, availability and performance.
Concord Communications	Network Health Traffic Accountant	Checks internal and external links; transfers files.
Optimal Networks	Application Expert	Tracks application calls to monitor bandwidth use.
Resonate	Central Dispatch	Schedules, monitors and load balances server traffic.

else's. This is especially important if you're replicating Web servers, which involves incessantly updating files and images. If you manually transfer files, you are bound to forget a file or two. Foote says his clients say as many as 60% of links become orphaned — with no front door, or way to get to that link.

Not likely to happen, you say? Remember that Unix is case-sensitive and Windows NT is not. That means if you're developing applications on NT, you can name a file ourlogo.gif, but if you forget and set a link to OurLogo.gif, NT will still recognize the proper file. If, however, you then upload that page to a Sun server, the link to OurLogo.gif will look for exactly that and won't find the file. Eventus helps by making sure the server parses the file name correctly.

Today's Web sites are often filled with dynamically generated content, garnered from multiple resources: Web server software, applications software and database software included. ClusterCATS is Bright Tiger Technologies' answer to managing multiple resources. ClusterCATS has what the company calls content-smart capabilities. By replicating all software and selectively distributing content among servers, ClusterCATS ensures a degree of failover. "There's always at least

breaks them down to the frame, packet and thread level to see what's happening in a transaction.

Another company looking at traffic patterns is Concord Communications. Concord's Network Health Traffic Accountant culls Remote Monitoring 2 data from network devices to create reports that look at traffic patterns.

Network Health lets you define a group of devices according to a business classification, says Kevin Conklin, vice president of marketing at Concord. For example, you can look at all the servers, the routers or whatever.

Network Health generates different levels of reports for technical people and executives, so financial types can look at the report and say, "Oh, my call volumes are going up. That's why my network managers are asking for more money," Conklin says.

For a while, at least, you're going to have to pick and choose your weapons. "At the moment it's a little bit like the Wild West," Cambridge Technology Partners' Gossain says. "There are a lot of ideas about what things are working and what things aren't working, but there isn't that much law and order." ■



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IS IBM'S  
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FACT

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performance by up to 60% when a Netfinity 7000 M10 server is used to serve up the Web.\* It's that we work with industry leaders like Intel to bring new, more powerful technology to market — in servers designed to use it to its fullest.

The Netfinity 7000 M10 server, for example, is powered by the new Intel Pentium®II Xeon™ processor 400 MHz, providing it with some of the highest performance benchmarks in its class. (Visit [www.pc.ibm.com/us/techlink/srvperf](http://www.pc.ibm.com/us/techlink/srvperf) for details.)

**History, plain and simple,** also separates Netfinity servers from all others. IBM has been building mission-critical systems for the corporate world for decades, and now we've applied that expertise to the world of Windows NT. Netfinity servers are the first to offer scalable parallel technology with a clustered system and hot-plug PCI implementation. Netfinity servers also offer scalability features you don't expect in a server running Windows NT — like the ability to hot-swap hard disk drives, adapters, power supplies, and more — without taking your network down. Netfinity servers are also quick and easy to integrate into your existing IT infrastructure, whether it's powered by IBM (thank you) or not.

**Netfinity servers from IBM aren't just tools for big business, they're tools for big e-business.**

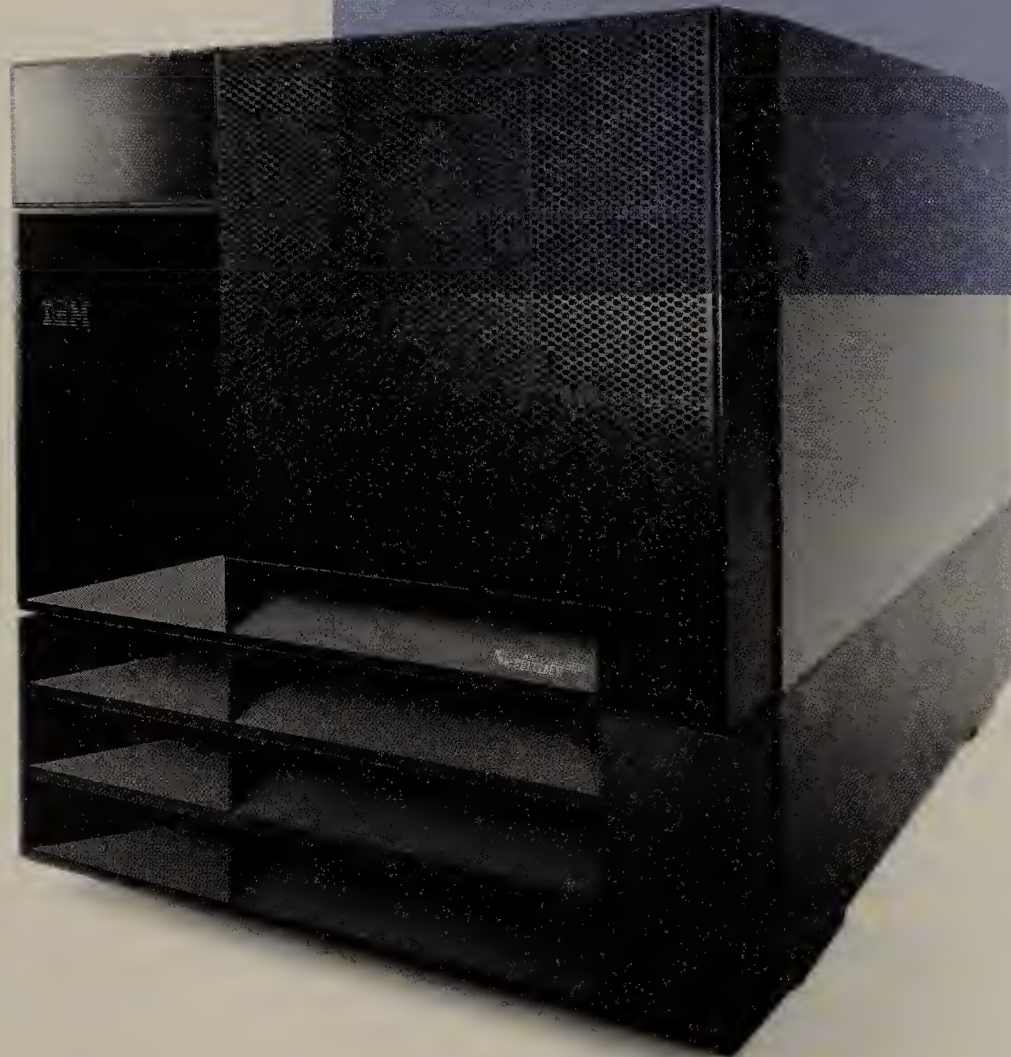
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FACT

**A server is a repository of information, information that quickly becomes powerful business intelligence when fully exploited. This is e-business. Knowing more about customers, what they need and want. Mining growth out of details. Uncovering new markets (and margins) from within.**

All these people connected via Windows NT servers also need access to the detailed information that resides on the more powerful systems that are the core components of a major enterprise (like, say, an IBM RS/6000 SP UNIX®

server capable of processing millions of transactions a second). In such a world, the ability to quickly and seamlessly integrate departmental Windows NT servers into your larger IT infrastructure is critical.


Netfinity servers, like the new Netfinity 5500 M10, help simplify this integration. Take, for example, IBM Netfinity Manager software. It ships with every IBM Netfinity server. It's platform agnostic. It lets you manage clients and servers from dozens of leading manufacturers. It also helps you tie your Windows NT network into enterprisewide management software such as Tivoli® Enterprise™, Microsoft® SMS™ and Intel LANDesk™.

**This is what e-business is all about** — not just building powerful servers for departmental use (and make no mistake, the Netfinity 5500 M10 can handle everything from huge e-mail networks to 24/7 Web commerce), but also providing tools to integrate and manage those servers as part of a much larger network. This helps you control costs and keep your network up and running.

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Of course, the value, quality and reliability of the Netfinity 3000 server is such that a whole bunch of not-so-small businesses will choose them by the dozens for things like print spooling and file management. Not the most glamorous tasks, but the day-in, day-out, got-to-be-dependable side of e-business.

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\*Netfinity 7000 M10 performance configured with four Intel processors and running Microsoft Windows NT, compared to next best competitor results on SPECweb96 benchmark as of July 17, 1998. Server configuration and test environment may vary. Estimated reseller price to end users for model 6660RU (Netfinity 7000 M10), 84766U (Netfinity 3000). All include IBM 4.5GB hard disk drive. Certain features described are available for an additional charge. Network operating system not included. Actual reseller prices may vary. MHz denotes microprocessor internal clock speed only; other factors may also affect application performance. For terms and conditions or copies of IBM's standard Limited Warranty, call 1 800 772-2227. In the U.S. Limited Warranty Service in those countries where this product is sold by IBM or IBM Business Partners (registration required). IBM product names are trademarks of International Business Machines Corporation. Microsoft, Windows and Windows NT are trademarks of Microsoft Corporation. Lotus, Domino and Domino Intranet Starter Pack are trademarks of Lotus Development Corporation. Intel, the Intel Inside logo and Pentium are registered trademarks and Pentium II Xeon is a trademark of Intel Corporation. Other company product and service names may be trademarks or registered trademarks of others. © 1998 IBM Corp. All rights reserved.



# Carriers & ISPs

Covering: The Internet • Interexchange and Local Carriers • Wireless • Regulatory Affairs • Voice Equipment

## Briefs

■ As expected, **President Clinton** has signed the **Year 2000 Information and Readiness Disclosure Act**.



Clinton signs Year 2000 act.

The law protects carriers from being sued for most statements they make about Year 2000 compliance.

Users, trade groups and the Federal Communications Commission have complained that carriers aren't being open about their Year 2000 programs or joint testing. FCC Commissioner Michael Powell asked carriers to show "commitment to the cause" by providing "timely and useful information that can be shared with government, industry and the public."

■ Time has run out on **Congress' efforts to pass antislamming legislation**. Last-minute negotiating on amendments before Congress adjourned **killed the bill for this year**. The bill would have increased penalties on marketers that change business or residential customers' carriers without authorization. Senate Commerce Committee Chairman John McCain (R-Ariz.) called on the FCC to beef up antislamming penalties in the meantime. "If the commission fails to do so, it will be one of the committee's first priorities next year," he says.

■ **Open Port Technology** is rolling out a new release of *Harmony Customer Premises Equipment*, a **fax client** that looks and operates like Microsoft's popular Outlook software application. The software lets users set more fax control features. Some service providers, such as UUNET and Gric Communications, use Open Port products to support IP faxing services. The new client is available now.

© Open Port: (800) 678-3291

## AT&T ATM: Not just transport anymore

*Carrier includes Visual Networks' performance monitoring as part of ATM service.*

By David Rohde  
Atlanta

If sometime in the future carriers no longer offer any straight, stand-alone transport services, mark the recent NetWorld+Interop 98 show as the turning point.

At the show, AT&T announced that beginning in the first quarter of 1999, it will only make its ATM WAN offering available as an enhanced service. Instead of just ports and circuits, AT&T ATM service will automatically include an AT&T-installed DSU/CSU on each user site to measure network performance.

The box, called the Analysis Service Element, is provided by Visual Networks, Inc. of Rockville, Md. Visual has assiduously wooed carriers to install its Visual UpTime system, which feeds packet throughput data from customer sites into a centralized server to measure user WAN performance.

AT&T, MCI WorldCom and Sprint all offer Visual UpTime in various fee-based options to their frame relay services. But AT&T is the first carrier to offer to install Visual's ATM Analysis Service Element on

user sites. And the deal is the first mandatory use of Visual UpTime in any carrier's service offering.

"This is for everybody who buys ATM from AT&T," says Jim Daugherty, AT&T's general manager for data services marketing. "We're taking the standard service level we had with ATM and raising it up."

However, with the new service, reports from the Visual UpTime system will be available mostly to AT&T engineers. AT&T will offer only complete reports — including those that flag overutilized and underutilized circuits — to users under what AT&T is now redefining as its "enhanced" ATM service (see graphic).

Still, users applauded AT&T's decision, citing the complexity of ATM applications. Providing the Visual box on each site "will significantly enhance AT&T's ability to proactively monitor, support and maintain the network," says Steve Luchko, lead telecommunications engineer at Air Products and Chemicals.

AT&T officials were cagey about the new arrangement's effect on the cost of ATM service. Technically, as a standard

offering, the Visual boxes will be provided at no extra charge above transport charges.

But AT&T did provide figures to *Network World* indicating that the basic ATM transport charges have increased since they were first made public in January 1997. For example, a T-3 ATM port — the only one the Visual ATM DSU initially supports — now costs \$12,650 per month, compared with the original \$11,000 per month.

Daugherty says it's fine if users consider the new standard port and circuit charges to include the benefits of Visual UpTime. But he adds that prices for ports and virtual circuits are negotiable.

By the third quarter, AT&T plans to offer standard ATM with the Visual Networks boxes for all flavors of ATM — T-3, T-1, Inverse Multiplexing over ATM and frame relay-to-ATM interworking. ■

### Not just transport anymore

Both of AT&T's available ATM service options now include end-to-end circuit monitoring:

#### Standard ATM Service

- ATM ports and permanent virtual circuits.
- Analysis Service Element from Visual Networks installed by AT&T at each site.
- Web tracking applications, including Installation Calendar, Network Site Map and Ticket Monitor.

#### Enhanced ATM Network Management Option

Standard ATM Service plus the following Web circuit reporting applications:

- Port and PVC utilization and throughput.
- Flagging of most active ports and PVCs, plus least utilized PVCs.
- Visual Networks' Burst Advisor recommending port and CIR sizes.
- Utilization by LAN protocol, a future application.

SOURCE: AT&T, BEDMINSTER, N.J.

## New UUNET service lowers ATM entry price

By Denise Pappalardo  
Fairfax, Va.

UUNET, an MCI WorldCom company, is offering customers an alternative to its high-priced, high-bandwidth Internet access services.

The ISP is rolling out its ATM T-3 Internet access service, which will let business users connect to the 'Net at multimegabit speeds for about 25% less than UUNET's other T-3 Internet access services.

Customers will connect to UUNET's Internet backbone via MCI WorldCom's ATM network. Today, UUNET customers that subscribe to the ISP's Tiered T-3 or Burstable T-3 ser-

vice have a dedicated private line connecting directly to the ISP's network.

Instead of a user getting a dedicated T-3 port on a UUNET switch or router as they would with the ISP's other T-3 services, UUNET's ATM T-3 service will be provisioned from a shared port on an MCI WorldCom ATM switch.

#### A shared service

The shared nature of the service makes it less expensive, says Ralph Montfort, director of product marketing at UUNET. Provisioning one user per T-3 port as UUNET does with its Burstable T-3 service is more

expensive to support than provisioning three or four users per T-3 ATM port as UUNET does with its ATM T-3 service.

MCI WorldCom and UUNET have set up multiple OC-3, 155M bit/sec dedicated connections between its ATM network and UUNET's backbone to support the service.

The ATM T-3 service starts at \$4,500 per month for a 3M bit/sec connection compared to UUNET's Tiered T-3 service, which is \$6,000 per month for the same amount of bandwidth.

And the customer premises equipment necessary to support the ATM T-3 service is also less expensive than the rec-

ommended equipment for UUNET's other T-3 services. To support its ATM T-3 service, UUNET recommends that its customers deploy a Cisco 4500 router with an ATM interface, which costs about \$18,000.

For its Tiered and Burstable T-3 services, UUNET recommends the Cisco 7200, which costs about \$25,000. The larger Cisco 7200 router is recommended with the other T-3 services because those customers need the ability of bursting to 45M bit/sec and the device is better suited for the "on-the-fly" bandwidth changes that the new service does not offer, Montfort explains.

But while UUNET's ATM service is less expensive it does

See UUNET, page 32



# SBC boosts IP service with Concentric deal

By Denise Pappalardo

If you're an SBC Communications customer, you'll soon be getting more direct access to the Internet thanks to a deal between the mega-local exchange carrier and Concentric Network.

SBC and Concentric Network late last month announced a contract where SBC will become a 4% owner of the Cupertino, Calif., ISP. In exchange, Concentric is getting \$22 million and access to hundreds of thousands of new customers.

"SBC customers will now have access to Internet value-added services that SBC couldn't provide," says Melanie Posey, senior analyst at International Data Corp., a Framingham, Mass.,

consulting firm. Those services include providing virtual private networks, Web hosting, shared software and electronic commerce applications. Concentric will also help SBC with development of its Online Offices packaged network service for small and mid-size businesses.

SBC also has the option of buying 4% more of the company in the next three years at \$21 per share. This could prove to be quite a bargain for SBC if Concentric's revenue continues to grow. Concentric's stock has sold for as little as \$14.50 and as much as \$26.25 in the past month.

Why would Concentric want to sell off even a small portion of its company? It seems to be par

for the course, according to the ISP's CEO, Henry Nothhaft.

Concentric's strategy from the start has been to partner with other large firms to gain access to infrastructure and to additional distribution channels, says Nothhaft, also chairman and president at Concentric. "We have a full portfolio of partnerships, with companies such as Teligent, Williams and Telecom Italia," he says.

SBC and Concentric are already planning a new service, called Online Office. Online Office will be a bundled LAN service that will provide users with LAN equipment, installation and network management services. SBC will also offer Online Office customers network-hosted applications such as e-mail, scheduling and electronic commerce. Concentric will bring its Web hosting, intranet and Internet access services to the Online

Office bundle.

Because Concentric will offer SBC customers inter-local access and transport area long-distance data services, SBC Online Office customers will potentially be able to connect more offices in more cities than if SBC offered the service solo.

The service is expected to be available by early next year in San Francisco and Austin, Texas, on a trial basis, with general availability slated for the end of the first quarter. Pricing is not yet available. ■

Get more online:

• An overview of Concentric's offerings.

• Other ISP news.

[www.nwfusion.com](http://www.nwfusion.com)

## UUNET

Continued from page 31

come with more overhead — sometimes called a cell tax — than private-line services. There is 15% to 20% more overhead with ATM, Montfort says. For instance, a user subscribing to UUNET's ATM T-3 service at 3M bit/sec is actually only getting about 2.5M bit/sec throughput, but the customer will save \$1,500 per month, Montfort explains.

For some users the cost benefits outweigh the cell tax, Montfort adds. Users that want a dedicated private line and port on the ISP's network have been willing to pay the additional \$1,500 per month.

The service is available now. Users will pay a one-time installation fee of \$5,000 plus monthly rates of \$4,500 to \$13,500 for 3M to 15M bit/sec, respectively.

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Concentric wants to fill out its partner portfolio, says CEO Henry Nothhaft.



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\*Only MCI WorldCom owns the entire network from origin to destination in many locations worldwide. MCI WorldCom is traded on NASDAQ under WCOM. For more information on MCI WorldCom, visit our web sites at [mciworldcom.com](http://mciworldcom.com) and [wcom.com](http://wcom.com). © 1998 MCI WORLD.COM, Inc. All rights reserved.



## WAN MONITOR

## Killing a gnat with a machine gun

A lot of things have changed recently at AT&T, but the carrier's old habit of using massive legal and PR overkill to solve a public-policy problem is once more on display in the Washington, D.C. area.

AT&T's weapon? The telecom industry's old favorite standby: the phony user front group.

It seems that Prince George's County, a large jurisdiction in suburban Maryland, wants to impose a 3% tax on carriers that use the county's rights of way to construct transport facilities. The tax would be charged to telecom, cable and wireless companies based on their revenue for certain new communications services.

In particular, AT&T's revenue from running new In-

ternet and telephony services over fiber and cable lines — in its completed merger with Teleport Communications Group and its pending merger with Tele-Communications, Inc. — would be taxed.

AT&T officials don't like the proposal, of course. But taxes on giant corporations aren't much of a political issue. And apparently AT&T doesn't think its normal lobbying efforts would trump the county's desire for additional revenue.

AT&T's solution: Turn the issue into a user tax. With the help of its Maryland PR firm, Nevins & Associates, AT&T concocted something called the Prince George's Coalition Against Hidden Taxes. The coalition spent \$50,000 on ads to warn county businesses and residents, "You are about to

be taxed!" The ads direct people to call a phone number with a recording saying, "We are a grass-roots organization." The recording also asks



David Rohde

"concerned" users to deluge their county representatives with protests.

The ads have outraged county officials, who say the proposed tax is on carriers, not users. The county executive even told *The Washington Post* that the campaign is a "disgraceful fraud."

AT&T officials told me the tactic is justified because they have warned the county council that the company will pass along the tax. But county officials say the ads leave the impression that even basic local and long-distance calls will be taxed, which they won't be — on the carrier or the user.

AT&T's case is not without merit. Like other carriers, it already pays permit fees and personal property taxes on its facilities. AT&T estimates those charges at \$218,000 per year in this county alone.

In addition, the county Chamber of Commerce says that regardless of how any new tax affects users, it's afraid that adding taxes on carriers will discourage enough of them from entering the market there to make it more competitive.

But there are so many other ways AT&T could have gone about making its point. It

could have taken out normal issue-advocacy ads, such as the ones Mobil Oil has been running for years. Or it could have at least identified itself as the backer of the supposed grass-roots coalition.

Even better, it could have approached some real telecom and IS user groups to support the coalition, although users' first reaction might have been, "Why are you passing along yet another fee?"

Two things are certain. Any other municipality looking to cash in on telecom deregulation is likely to face the same hardball tactics. And even though AT&T now has almost every tool it needs to compete in the local telecom market, its lawyers will make sure political games still soak up a good chunk of AT&T's energy in this brave new world.

*Rohde is a senior editor with Network World. He can be reached at drohde@nww.com.*

world



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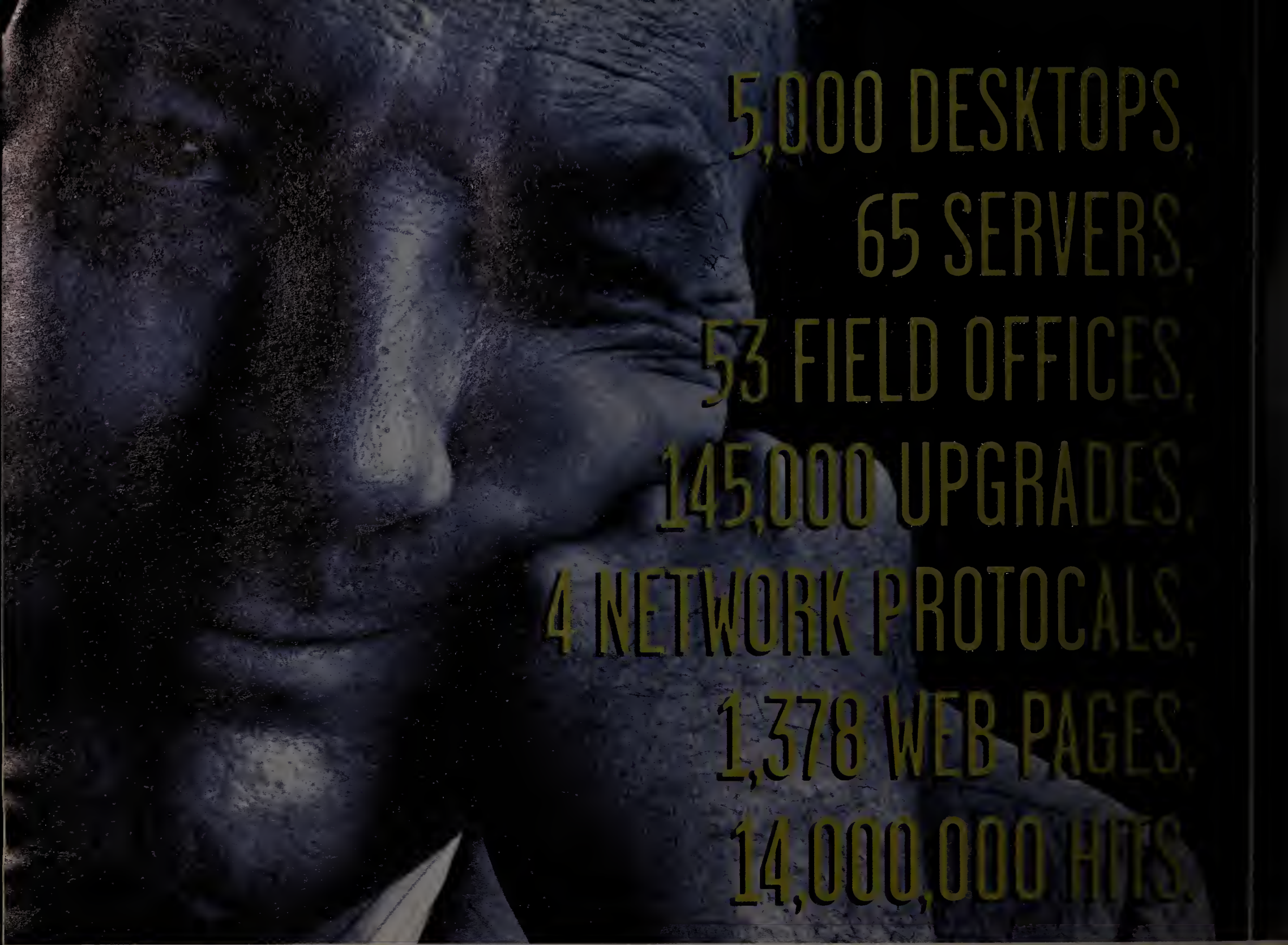
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# Intranet Applications

Covering: Messaging • Groupware • Databases • Multimedia • Electronic Commerce • Security

## Briefs

### Frank Moss, one-time CEO of Tivoli,

grew that firm, took it public and ultimately sold it to IBM for \$743 million. Shortly after he resigned, Moss launched a venture capital company, Strategic Software Ventures LLC,



Moss is starting up again.

and a software firm, Bow Street Software. Now he's at it again, starting Agillion, Inc. with Steve Papermaster.

Papermaster founded systems integration consultancy BSG Corp., which he sold to Medaphis Corp. for \$350 million. He then founded his own venture capital company, Powershift Group. Agillion, backed by money from both men's venture capital firms, is based in Austin, Texas, and aims to sell mid-size firms enterprise resource planning-type business and customer-centric applications over the 'Net.

IBM has added a suite of intrusion-detection services based on tools from Internet Security Systems and other companies. For \$27,500 per year, IBM will analyze an organization's host and Internet access security, and install hardware on a customer's premises to monitor for vulnerabilities. Intrusions will be immediately reported and acted upon from IBM's Emergency Response Service Command Center.

Vignette has announced the Vignette Syndication Server based on the Information and Content Exchange 1.0 set of APIs for managing Extensible Markup-up Language-based content exchange.

The server is expected to ship in early January, with prices starting at \$50,000.

© Vignette: (888) 608-9900

## E-mail lifesaver or in-box invasion?

Vendors and users debate a controversial e-mail retraction function.

By Paul McNamara

"Unsend! Unsend! Unsend!" You've probably seen the TV commercial in which two co-workers fed up with their lousy laptops fire off a flaming e-mail to the boss, only to learn seconds later that he has already ordered them new machines. A frantic, futile search for the "unsend" button ensues.

In real life, some e-mail products — Novell GroupWise and Microsoft Outlook, for example — let users "unsend" or retract a message. However, the message needs to have been sent within the company to another user of that same software and cannot already have been read. Novell officials call this option the "save your job feature," and they insist customers love it.

On the other hand, market leader Lotus does not support retraction capabilities in Notes and has no plans to do so even when Version 5.0 ships later this year. Although some customers have recently expressed interest in the capability, Lotus

says most consider the feature a low priority, or worse, an administrative headache that customers would rather not introduce into their networks.

Amid the differing vendor

versations over the last 10 years about exactly that question and have asked a lot of customers about it," says John Gailey, Novell director of collaboration services. "What we have

not undo or retract it."

That sounds reasonable, but imagine this scenario: You open your in-box view and see 10 freshly delivered messages. Just as you move to open the one

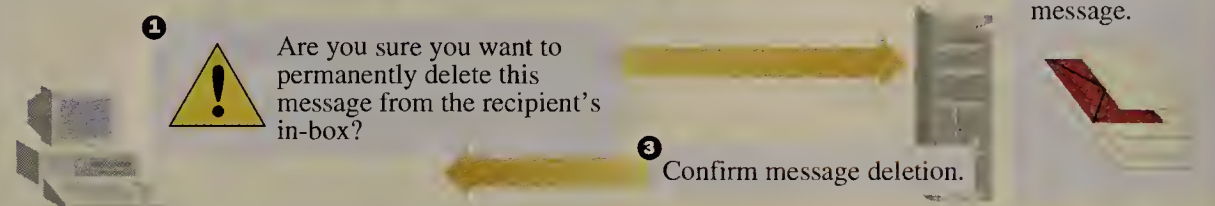
### An e-mail 'do over'

How retraction works in GroupWise:

1 When a message needs to be retracted, the sender highlights it in his out-box and deletes it. A prompt asks whether the message is to be deleted from the out-box, the recipient's in-box or both.

2 A retract message, which contains an identifying reference to the original e-mail, is sent through the GroupWise server to the recipient's GroupWise post office. The post office finds the original, and only if it has not been read, deletes it from the mailbox.

3 A status message noting the deletion is returned to the sender's mailbox, with that information now accessible from the original message's properties page.



approaches and customer opinions lies this question: At what point does possession of an e-mail message transfer from a sender to a recipient?

"We have had a lot of con-

evolved to is that as a sender it is my e-mail message until you have opened it or accessed it some way. Once you have accessed it in some way, it is now your e-mail message, and I can-

from your boss — poof — it disappears before your eyes.

Never mind "save your job," some might call that a "shake your confidence" feature.

See Unsend, page 36

## Software syncs short-term jobs, workers

By Chris Nerney

Hermosa Beach, Calif.

The past decade has seen a dramatic shift in employment patterns in the U.S., as more corporations have opted for short-term contract workers.

Nowhere is the trend toward temporary employees more noticeable than in the high-tech industry, which features rapidly evolving technologies and a slew of start-up firms.

Rather than feeling resentful or threatened, high-tech workers welcome the flexibility and constant opportunities presented by this new labor economy.

Now start-up PeopleMover, Inc. has introduced the first of a planned series of Web-based enterprise work-force management software products designed to help temporary workers and companies looking for short-term contract employees

find each other.

PeopleMover CEO Jim Jonassen says the new software, Remote Application Entry, will speed the process by which

information about contract employees is made accessible to companies looking to fill temporary and project-based jobs.

While there are many Web-

based services catering to full-time permanent positions, "nobody is servicing the 'free agent' market," Jonassen says.

Remote Application Entry allows independent contractors and job-seeking knowledge workers to "register" their backgrounds, skills and preferences online. The software's template (see graphic) requires applicants to use PeopleMover terminology, thus avoiding the need to modify information to help employers search the PeopleMover database.

PeopleMover was launched in March as a spinoff from Micro J Systems, a vendor of software for executive search and regional staffing companies.

Remote Application Entry is available free on the PeopleMover Web site at [www.peoplemoverinc.com](http://www.peoplemoverinc.com). It runs on any browser.

© PeopleMover: (310) 374-1900

### ONLINE AND ON THE JOB

PeopleMover software targets "free agent" contract workers.



## Unsend

Continued from page 35

Moreover, with the threat of e-mail-related harassment lawsuits a growing reality, it isn't difficult to imagine the potential for user abuse of this tool.

At least that's the way Lotus and

some IT professionals see it.

Proponents of e-mail retraction, however, see more benefits than pitfalls. They call retraction an invaluable remedy for those instances when sensitive material gets distributed inadvertently, a meeting time needs to be changed or an e-mail goes out without its promised attachment.

Travis Berkley, supervisor of LAN support services at the University of Kansas, is a firm supporter of the retraction function in GroupWise. "It keeps you from looking stupid" when fresh information or a belatedly discovered mistake turns an already delivered e-mail message into a problem just waiting to be opened, he says.

"I have had folks ask me how to retract over the Internet because they've gotten spoiled on GroupWise," Berkley says. "You can actually watch the blood drain out of their faces" when they are told this is not possible today, he says.

Chris Miller deals with Lotus Notes daily as a senior systems manager at Catalyst Solutions Group in St. Louis. He says he is "thankful" that Lotus is not including retraction capabilities in the upcoming Notes 5.0 and Domino 5.0 releases. Besides what he envisions as administrative headaches, Miller sees such features creating false impressions among workers as to who owns what when it comes to corporate e-mail.

"You never actually own the message as long as it exists somewhere on a company machine, whether it be local or on the server," Miller says. "Even drafts can be read, and now companies are coming out with policies on the ability to open an employee's mail file whenever they see fit."

Miller is unconvinced by anecdotes arguing the usefulness of retraction.

"If it comes to leaving something out, then send another complete message or addendum," he says.

Lotus believes that Miller's opinion represents the majority viewpoint among its customers.

"Retraction is really a double-edged sword," says Lance Shaw, a Notes product manager. The sophisticated replication capabilities and mobile support found in Notes and Domino virtually guarantee that a message sent to a significant number of recipients could not be retracted from all of them, he maintains.

"Generally, the majority of our customers are saying that if we can't guarantee they can do retraction completely, then it's somewhat futile," Shaw adds.

Jim Santiago, assistant vice president of information services at AEW Capital Management in Boston, currently oversees a GroupWise shop and also has recent experience with Notes.

"Notes is like the U.S. post office: Once you e-mail your message, it's gone," Santiago says. "GroupWise does give you the ability to take back a message, but the fact is unless that person is out of the office, they will probably read it before you delete it."

While he likes using retraction for rescheduling purposes, Santiago also believes the feature undermines the notion that companies, not employees, actually own the e-mail. ■

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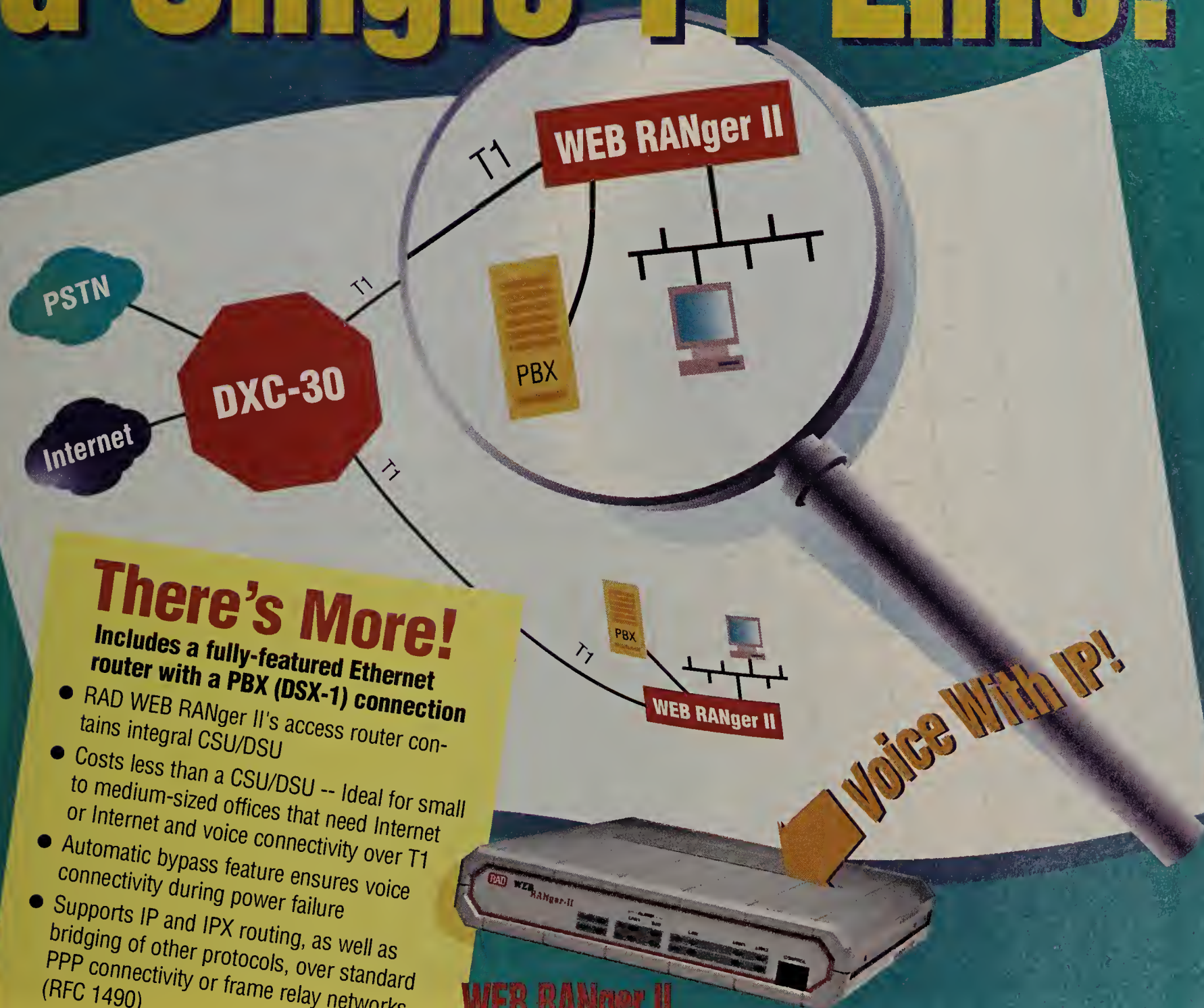
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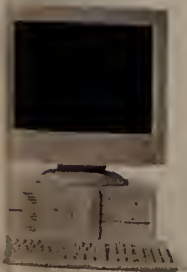


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# NET INSIDER

## The Internet and the Citgo sign

The Wall Street Journal reported on Oct. 14 that the Internet, or at least a "chunk" of it, to use the Journal's terminology, was given to the

Library of Congress.

It turns out that Alexa Internet, a Web crawler company in Seattle, gave the library an archive of a half million

Web pages that adds up to about 2 terabytes of data.

The archive is a snapshot of the World Wide Web taken early last year. The data is housed in a computer rack-like structure with four bright red computer monitors stacked one on top of the other. The monitors display random pages from the archive every few seconds.

Why would the library want such a toy, other than because it's fun to watch?

One of the tasks libraries undertake is that of archiving the times in which they exist. For example, they archive newspapers and sometimes tapes of TV and radio programs. This is so future scholars can get a better idea of the context in which events happened. For a historian, it can be helpful to know what the popular press focused on during the time leading up to a major event, such as the start of a war, and what topics dominated conversation after the event.

This type of archiving proved easy when all the news was in print; microfilms of old newspapers did the trick. But things became more complex with the advent of film, radio and TV. It would be hard to assemble a good history of the Vietnam War without having access to archival copies of the evening news broadcasts.

Archiving the current world is even more difficult. More and more of what affects our lives is now found on the Internet in newsgroups, e-mail messages to mailing lists and Web pages. For example, huge numbers of people have had access to the Starr report via the Web. Some of them might have even read it, rather than just skimmed it looking for the naughty bits. While the report itself was published on paper, the backup material was not. The only way this material existed for most of the world was as bits on the 'Net.

I will say that archiving digital information can sometimes be difficult to justify. It can be quite hard to see that useful information for analyzing current society could come from some Internet mailing lists. For example, a discussion about the evils of spam (the e-mail kind, not the canned meat product kind), approaching a kind of perpetual motion, has taken over the comppriv mailing list.

Then again, in Boston a few years ago it was decided, for the sake of preserving '50s culture, that it was vital to preserve the big neon Citgo sign towering over Kenmore Square.

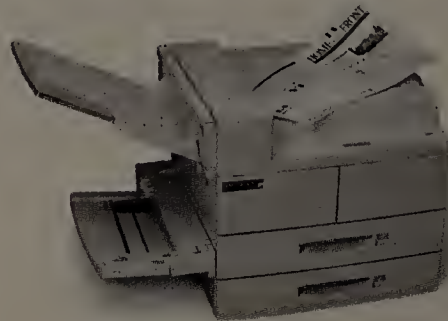
So, although culture is definitely in the eye of the beholder, the ephemeral Web will have to be part of the archive if future generations are to know what affects our thinking today.

Disclaimer: Compared to Harvard, much of the world has proven to be ephemeral, but the above are my ephemeral observations.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at [sob@harvard.edu](mailto:sob@harvard.edu).

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# Technology Update

Covering: Evolving Technologies and Standards

## XML: The language of the World Wide Web

*Fostering Web application development is the goal behind Extensible Markup Language.*

By Phillip Merrick

Extensible Markup Language (XML) is poised to become the technology of choice for corporations conducting business-to-business commerce via the Internet.

XML is founded on the principles that guide any successful computing movement. It is

tured records, data objects and geographical objects.

Beyond these basic features, however, the computer industry has broader purposes in mind for XML. The industry's goal is to bridge the communications gap that exists across organizations by integrating enterprise resource planning (ERP),

management, shipping and other business services, should go within the enterprise.

### Electronic commerce potential

XML also provides a solid basis upon which corporations may develop their own protocols for electronic commerce. An XML Document Type

naming conventions.

While the electronic commerce plans of many organizations have stagnated due to the limitations of proprietary electronic commerce and integration solutions, XML vendors are offering open, practical alternatives.

XML provides a common messaging format that can be deployed across a variety of platforms, and it can be interpreted by an equally diverse set of tools.

The technology supports multiple standards for character encoding, which makes it applicable to the diverse computing environments that exist around the world. With the capability to support Java, C++, VisualBasic, PowerBuilder, SAP, Baan, PeopleSoft and many other popular environments, XML has been designed from the ground up to be as interoperable as possible.

### A common API possible

XML also provides the basis for a common API across Web servers, legacy systems, databases and middleware infrastructures. This will allow companies to link business processes across a diverse set of systems without having to write custom APIs. Applications can be linked directly into back-end systems using only the open standards of the World Wide Web (HTML, XML and HTTP) as the glue.

*Merrick is president and CEO of webMethods, a provider of XML business-to-business electronic commerce and integration software. He can be reached at [phillip@webMethods.com](mailto:phillip@webMethods.com).*

### Need information?

Let *Network World* provide a quick primer on an important or emerging technology. If you have an idea for Technology Update, contact Michael Cooney at (508) 875-6400 or [michael\\_cooney@nw.com](mailto:michael_cooney@nw.com).

## UP CLOSE

### Extensible Markup Language

XML is a project of the World Wide Web Consortium and is being honed by the XML Working Group. Proponents say the technology removes two constraints that could slow Web application development: dependence on a single, inflexible document type — HTML — and the complexity of the Standard Generalized Markup Language (SGML). Theoretically, XML simplifies SGML, and allows the development of user-defined document types on the Web (for more information see <http://www.w3.org/TR/NOTE-sgml-xml-971215>).

accessible as an open standard; it is interoperable across disparate platforms and applications; and by computing standards, it is a development language that is simple to understand and use.

Backed by a recently issued standard by the World Wide Web Consortium, XML 1.0 offers an efficient method for defining and sharing document information over the World Wide Web and across distributed applications.

XML is a restricted form of Standard Generalized Markup Language. Originally designed as a simple tool for document creation and management, XML can be used to encode documents, data records, struc-

Web programming languages are similar, but there are differences. According to the XML Special Interest Group:

**SGML** is the Web's "mother tongue," used for describing thousands of different document types in many fields of human activity, including transcriptions of ancient Sumerian tablets, technical documentation for stealth bombers, patients' clinical records and musical notation.

**HTML** is just one of these document types, the type most frequently used on the Web. HTML defines a single, fixed type of document with a markup that lets users describe a common class of simple office-style report, with headings, paragraphs, lists and illustrations and some provision for hypertext and multimedia.

**XML** is an abbreviated version of SGML that makes it easier to define document types, and easier for programmers to write programs to handle them. XML omits the more complex and less-used parts of SGML in return for the benefits of easier to write and understand applications that are more suited to delivery and interoperability over the Web. But it is still SGML, and XML files may still be parsed and validated the same as any other SGML file. Programmers may find it useful to think of XML as being SGML — rather than HTML++.



Electronic Data Interchange and Web-based systems.

### Simplifying data exchange

The level of detail XML provides for document identification is what makes it most effective as a platform for electronic commerce. Like HTML, XML uses elements and attributes that are represented by tags in a document.

The tags identify structures that, in XML, are easy to store and manipulate. The tags also enable XML to contain meta-data — information about the content in the document, including hierarchical relationships. This detail can help define where shared data, such as accounting, inventory man-

agement, shipping and other business services, should go within the enterprise.

DTDs may be used to define standard vocabularies designed for specific functions. For example, the messaging formats for strategic partners along a supply chain could be specified by a common DTD.

Currently, there are a number of industry-specific consortiums working toward the development and adoption of universal predefined tag sets. But the benefits of using XML for data and document interchange can be realized without requiring that all entities standardize on predefined XML

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I have just taken over as administrator of a Windows NT network. From information left by the previous administrator, it looks as if I have an assortment of service packs and hot fixes to keep track of. Can you explain the difference between the two and when to use each?

#### Via the Internet

Service packs are a collection of files Microsoft has compiled to fix problems and, in some cases, add features. Service packs are cumulative in nature. For example, Service Pack 4 should include all fixes released since availability of the earlier version, as well as all updates released in earlier service packs.

Some people advocate applying a service pack as soon as it's released. Others say to apply a service pack only when the situation is warranted. It's important to keep the service pack that was installed on a given machine on hand. If you install an NT feature after a service pack has been installed, you'll need to reinstall the service pack to ensure the latest updates are in place for the service you just added. After you've installed the service pack, you'll need to reinstall any hot fixes applied after the last service pack.

Hot fixes address problems identified after the release of the latest service pack. You should only apply a hot fix at the direction of Microsoft technical support and only when you are experiencing the specific problem identified in the particular hot fix. When a new service pack is released, check if the hot fixes that you are using have been updated in that service pack. If they haven't been and you apply the service pack, you'll then need to reapply the hot fixes.





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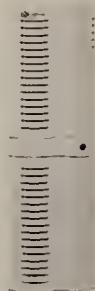
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## Firing up a Frame Relay Showdown for ComNet

If you missed our ISP Showdown at Internet World in New York or the Layer 3 Switching Showdown at NetWorld+Interop in Atlanta, you lost out on the chance to see some of the industry's top executives spar over strategy and products. Both debates crackled with competitive tension, and they gave showgoers great insights into the future of Internet services and LAN switching. (You can find stories on the Showdowns at [www.nwfusion.com](http://www.nwfusion.com).)

Don't beat yourself up, though. You're busy. We understand. Anyway, life is about change and personal growth. Each day offers new opportunities. In fact, we're offering you yet another chance to enjoy one of our unique Showdown sessions. On Tuesday, Jan. 26, at the ComNet conference in Washington, D.C., we'll be staging one of these presidential-style debates among the leading frame relay service providers. A panel of experts will fire questions at the frame relay hotshots we round up, and the carrier executives will also take each other on in a second round of questioning. Audience members can launch queries at the service providers as well. Our experts will be David Rohde, a *Network World* senior editor covering the frame relay market; Steve Bell, founder of the Silicon Valley Networking Lab, a leading test and consulting organization on the West Coast; and Atul Kapoor, a highly respected networking

analyst with The Tolly Group in Manasquan, N.J.

Now there are no free lunches in life, and I need some help preparing for this Showdown. I want your advice on which vendors should take part in this debate. Which service providers most interest you? Which have confused you most with their marketing rhetoric? Which are offering innovative new services you want to learn more about?

Also, what should we be asking these folks? What do you need to know about frame relay pricing or deployment? What about the tools these carriers are providing for managing frame relay networks? And what do you want to know about how frame relay and virtual private networks will mix?

I'll take your insights and come up with a list of four to six frame relay providers to invite. Invite isn't quite the right word. We challenge these vendors to send a top-level executive — chief technical officer or CEO — to take part in the debate. In staging six other Showdowns, we've only had one vendor turn us down (and that vendor, unbeknownst to us at the time, was about to be sold).

So take advantage of this opportunity for personal growth. Get to the Showdown. And drop me a note with your ideas. Thanks.

*John Gallant, editor in chief*

[jgallant@nww.com](mailto:jgallant@nww.com)

*T o t a l l y   U n p l u g g e d   •   I r a   B r o d s k y*

## Clinton's Internet policy is just another white lie

A year ago in this space I called the Clinton administration's Internet white paper "A Framework For Global Electronic Commerce" a masterpiece of subtle deception. Authored by Ira Magaziner, Clinton's top Internet advisor, the document appears to advocate reliance on market forces and competition. I contended this was a ruse — that the administration's true objective was to reel in powers rapidly migrating to the network's edges.

There is now concrete evidence I was right.

The past few months have witnessed a series of behind-the-scenes power struggles, many of them chronicled in "The Cook Report on Internet" ([www.cookreport.com](http://www.cookreport.com)), over the administration of IP addresses and domain names. But there is also an international dimension to the conflagration, with North American, European and Asian governments using privacy laws and export restrictions to try to get the upper hand in electronic commerce.

The Clinton administration revealed its predilection for top-down Internet governance when the Department of Commerce nixed a National Science Foundation (NSF) plan to grant Network Solutions, Inc. (NSI) a permanent franchise for domain name registration. NSI has done the job for years at what everyone agrees are reasonable prices. Yet NSI's new Commerce Department contract, reportedly negotiated under extreme duress, is designed to gradually force NSI out of the ".com" registration business. In its place, the Commerce Department plans to set up a single, quasi-private entity that purportedly will represent the entire Internet industry: Internet Corporation for Assigned Names and Numbers (ICANN). In effect, the department is taking away NSI's monopoly and giving it to ICANN.

The first steps toward establishing ICANN were conducted in an open process. But the only thing the Clinton administration's utopian "direct democracy" approach yielded was more questions. So in September the proceedings were moved behind closed doors. Apparently, the shots are now being called by the Internet's old boys' club. Little is known about ICANN's board of directors

and how they were selected.

So here's what Magaziner meant when he talked about less government regulation and more industry self-regulation. In what could be called the third wave of politics, governments no longer regulate industries directly. Instead, they set up phony "private" companies and invest them with unprecedented powers. Then they let everyone have their say by posting e-mail messages to government Web sites. Finally, they shut the doors and hand out board of director positions to allies and potential allies.

For example, the Clinton administration is using participation on ICANN's board as a bargaining chip with other governments. European governments are trying to stem the tide of U.S.-dominated electronic commerce by pretending to champion individual privacy rights. The U.S., meanwhile, wants Europe to ease off on privacy rules that hinder U.S. firms conducting electronic commerce in Europe. Reportedly, three Europeans were appointed to ICANN's board. Now it's Europe's turn to reciprocate; the privacy laws were scheduled to go into effect at the end of October.

The Clinton administration watched passively as business turned the Internet into a gargantuan success. Then Magaziner was appointed to restore governmental control. Now we can only hope Congress, which has just launched an investigation into the entire ICANN affair, has the good sense to stop him.

*Brodsky is president of Datacomm Research, a Chesterfield, Mo., consultancy. He can be reached at [ibrodsky@ix.netcom.com](mailto:ibrodsky@ix.netcom.com).*



## MESSAGE

Send letters to [nwnews@nww.com](mailto:nwnews@nww.com) or John Gallant, editor in chief, *Network World*, 161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification.

### Deadly propaganda

The message "How would you like to be Bill Clinton's friend?" that is circulating via the Internet, which details the numerous "mysterious" deaths among Clinton friends and associates, is a perfect example of what Mark Gibbs writes about in his column "Net's potential as a propaganda machine" (Oct. 5, page 82). While many of the deaths the message lists are well known, I suspect that most of the details are only partially true or totally false.

Besides, it may be true that all presidents and others in



# The next big thing: Management intranets

**I**ntranets have taken off over the past few years, giving enterprises of all sizes the benefits of both bottom-up and top-down information sharing. Now management intranets are set to experience a similar burst of popularity.

A management intranet uses World Wide Web technologies and techniques to integrate disparate management tools and databases, provide universal access to documentation and promote distributed collaboration among far-flung IS support people.

Support specialists already rely on the Web for all kinds of information. Now a growing number of management software vendors, from big players such as Cisco and Tivoli to start-ups such as NextPoint and Manage.com, are coming out with Web-based management tools and suites. The Web is the platform for integrated enterprise management, and the Web-Based Enterprise Management (WBEM) standards that the Desktop Management Task Force is developing are the critical interfaces.

By integrating the management intranet with the overall enterprise intranet, IS support staff will be able to serve end users in new ways. For example, Web-based interfaces to help desks will offer self-help to users and provide bulletins about outages or new services. Automated, Web-based processing of administrative tasks such as moves, adds and changes will be a welcome relief from existing IS service requisition systems. What is most exciting, however, is the way in which the Web technologies will allow support teams to integrate information and services from external providers, including vendors, carriers and out-sourcers, with the information generated by internal tools.

Thus, the management intranet is quickly being extended into a management extranet. Just as virus-scanning software uses the Internet to update signature files, management tools are beginning to reach back to vendor Web sites via the Internet to download program updates or access frequently changing problem or configuration information.

The most sophisticated vendors (most notably Cisco) are using their Web sites to create user communities among their customers. As a vendor's user base swells, so does the value of these communities, where support people exchange solutions to vexing problems and swap experiences with new products. Customer Network Management interfaces to carriers and other service providers will soon be based on secure browser sessions that can then be tied into the overall information base and tool set available to the management intranet's users.

Using Web and Internet standards rather than vendor-specific framework stan-

dards will make it less expensive for management software providers to integrate their products with those of other vendors and enable them to get new releases to market more quickly. The focus will shift to delivering valuable functionality rather than testing and porting to ensure compatibility with competing platforms and frameworks. Management systems will use Extensible Markup Language to dynamically exchange management data defined by WBEM's Common Information Model standard. Systems integrators will be able to let people with general Web development skills put together customized suites of tools from multiple vendors. IS departments will be able to tailor vendor offerings and link them with in-house tools and databases. To get started, assign a Webmaster to your IS support team to set up your management intranet server and begin collecting in-house documentation and databases on it.

Management intranets and extranets allow network and systems management processes to be adapted quickly to electronic business approaches, with corresponding improvements in speed and efficiency. Just as businesses are using the Web to electronically join entire supply chains, so the IS department can tie itself via the Web to its suppliers and service providers. We may start with Web access to vendor service and support, and expand into Web purchasing of hardware, software and services, as well as more outsourcing of IS services of all sorts. Each enterprise must look hard at what it should do in-house and what it can better obtain from Web service providers.

If the Web is the new management platform, are existing management platforms and frameworks dead? Not if platform vendors support the management intranet approach and use Web technologies to create new levels of functionality and innovative solutions to traditional management problems. Major platform vendors Tivoli, Computer Associates and Hewlett-Packard are not likely to underestimate the significance of the Web and show no signs of being overtaken by the new crop of Web-oriented management start-ups coming into the market.

Establishing global service management across a large, highly distributed enterprise presents many daunting problems. Management intranets are a flexible, pragmatic approach to solving these problems; they are based on open standards and harness the rapid innovation of the Internet and Web.

*Herman is a vice president at Northeast Consulting Resources, a Boston consulting firm focused on the intersection of business and IT strategy. He can be reached at herman@ncr.com.*



positions of great power have such wide circles of associates that a large number of deaths — even violent deaths — would naturally occur. If you searched hard enough to find such deaths among associates of any powerful person, you might get stunning results. In fact, by a slight extension, you could draw up such a list for almost anyone because we are all connected to each other by just a few degrees of separation.

*Jo Zarboulas  
Technical writer  
Austin, Texas*

## Who you gonna call?

Regarding Mark Gibbs' column "Shredding those who don't get it" (Oct. 12, page 70):

Add to Gibbs' list of Web site problems those that don't list the company's phone number or address. At my previous employer, we were trying to find someone to send a request for proposal, and half of the Web sites we investigated didn't have any information on whom

to contact to buy something.

This is the same for many ads in trade journals; the only information is an 800 number that goes to a telemarketing center that can't answer any technical questions about the product.

*Robert Noakes  
San Francisco*

## Another view

In his editorial "Microsoft: The threat from within" (Oct. 12, page 42), John Gallant contends that Windows NT Terminal Server Edition (TSE) "has the potential to knock Gates and company for a loop." I disagree, not because Gallant is wrong, but because I think Microsoft will do what it can to keep TSE in check and is even planning to make it essentially fade into

the background.

TSE does not undercut NT Server sales; it increases them. Microsoft has said that a server running TSE should not be running other BackOffice applications such as SQL Server or Exchange. The system just can't handle it. This means that for many enterprise applications, you have to have a TSE server and a SQL Server on separate machines, with twice the number of per-user NT Server licenses.

TSE will probably end up being part of NT 5.0. The TSE kernel has been integrated into NT 5.0; it is an install time option to turn your NT 5.0 server into a thin-client server. It seems Microsoft doesn't expect TSE to be a moneymaker, or it doesn't want users to think of TSE as an alternative

to standard NT Server.

I'm mystified as to how TSE will remain a recognizable product for long once Microsoft starts shoving users toward NT 5.0. I think Microsoft never wanted people to pay too much attention to TSE because it

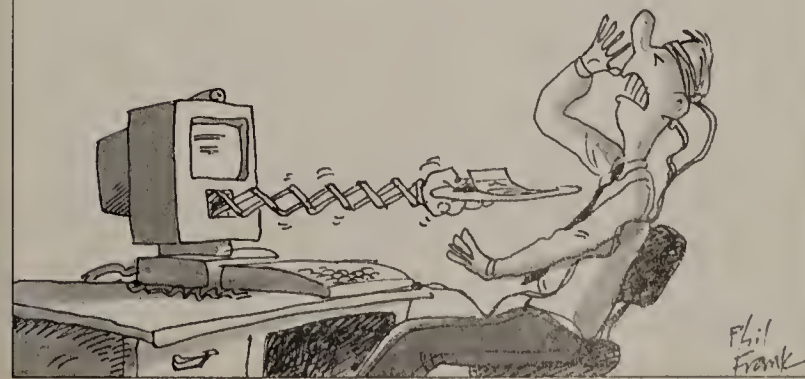
interferes with Microsoft's regular product line. Once people realize that the pricing and performance are fairly unimpressive, they will probably stick to regular NT systems.

*Rawn Shah  
Tucson, Ariz.*

## Teletoons

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# Preparing for ERP

By Neal Weinberg

**A**fter a year of intense network planning, Becton Dickinson next month is slated to turn on a SAP R/3 enterprise resource planning (ERP) system at the first of 180 sites worldwide. By the time it's finished, the project is expected to cost the medical products company in excess of \$100 million.

Most of the investment to streamline the company's manufacturing-related business processes centers on R/3 software modules, consulting fees, training and server hardware. But Becton Dickinson is also spending between \$3.5 million and \$5.5 million to upgrade its LANs and WANs.

On the other hand, Brother Industries, a Bartlett, Tenn., manufacturer of typewriters and word processors, over the past year rolled out SAP R/3 after making only minor tweaks to its 150-node LAN.

That kind of disparity is not uncommon in the world of ERP because there is no standard network configuration or magic formula when it comes to making the leap to the three-tier client/server computing required for ERP systems. "There is no silver bullet answer," says David Lee, senior manager at Deloitte Consulting in New York.

But there are some best practices to follow, such as doing detailed network capacity planning prior to implementation and continuing to monitor traffic once the system is up and running. There are also certain technologies ERP implementers seem to favor, including switched Ethernet to the desktop, frame relay on the WAN and either ATM or Fast/Gigabit Ethernet in the data center. And there's a major pitfall to avoid: underestimating the surge in traffic that an ERP rollout brings, especially on the wide area and in the data center.

### Gauging capacity

In his consulting work, Lee uses a tool called OPNET Planner from the Washington, D.C. company MIL 3 to ensure the network has enough capacity to provide acceptable response times without going overboard in terms of bandwidth, especially on costly wide-area links.

Joe Huehne, IT analyst at 3M, the worldwide manufacturing firm, had just those capacity concerns. His company was considering a move to the PeopleSoft 6.0 human resources package but was worried about WAN connectivity costs.

Huehne hired Make Systems in Mountain



BFI's Tom Veronie says it's not the ERP systems that tax the network, but ancillary applications.

View, Calif., to conduct some capacity planning. Using Make Systems' NetMaker tool, Annette Clewett, senior network consultant at the company, first did a baseline analysis of six WAN links and discovered about half the available WAN bandwidth was being used by other applications.

Clewett then brought several 3M employees into a test lab and, using a delay simulation tool, had them determine how many milliseconds of delay were acceptable when they called up the PeopleSoft application.

Armed with that information, Clewett determined that each user would require 20K bit/sec of bandwidth in order to access the PeopleSoft application within an acceptable response time. Keeping in mind only half the capacity of the WAN links was available, Clewett calculated that a 64K circuit could barely support two concurrent users, and a 128K bit/sec pipe could only accommodate three users at a time.

Faced with the prospect of upgrading more than 100 WAN circuits, 3M decided instead to

move to Version 7.5 of the PeopleSoft software. Version 6.0 is two-tier, which means each client talks directly to the database, creating a heavy traffic flow out to the desktop. Version 7.5's three-tier design significantly reduces WAN bandwidth needs because the application server, which sits between the database server and the end user, serves as a buffer.

For example, to enter an order into the system, an end user requests the application from the application server, which sends out a blank form to the desktop that simply needs to be completed. The database server is not involved at all. Sending the completed form back to the application server likewise requires minimal bandwidth and doesn't involve the database server. The heavy-duty traffic flows between multiple application servers and the central database as they shuttle data back and forth to complete the transaction.

### Prepare for the deluge

Network managers who have gone through an ERP rollout agree that capacity planning, either using their own best estimates or in conjunction with consultants or vendors, is important. But they add that all the upfront planning in the world may not prepare you for the flood of traffic that can occur after an ERP rollout.

The flood is not due to the ERP applications themselves. In fact, an ERP implementation may require no additional bandwidth. A desktop-to-application server transaction under SAP R/3 generates only a 1.5K to 2K bit packet, says Tony Alfano, a vice president in SAP's professional services organization. An example would be a screen that contains a billing or inventory form that the end user fills out and sends back to the application server.

Browning Ferris Industries (BFI), which is undergoing a massive SAP R/3 rollout, found the SAP application didn't tax the network any more than green screen terminal-to-mainframe transactions.

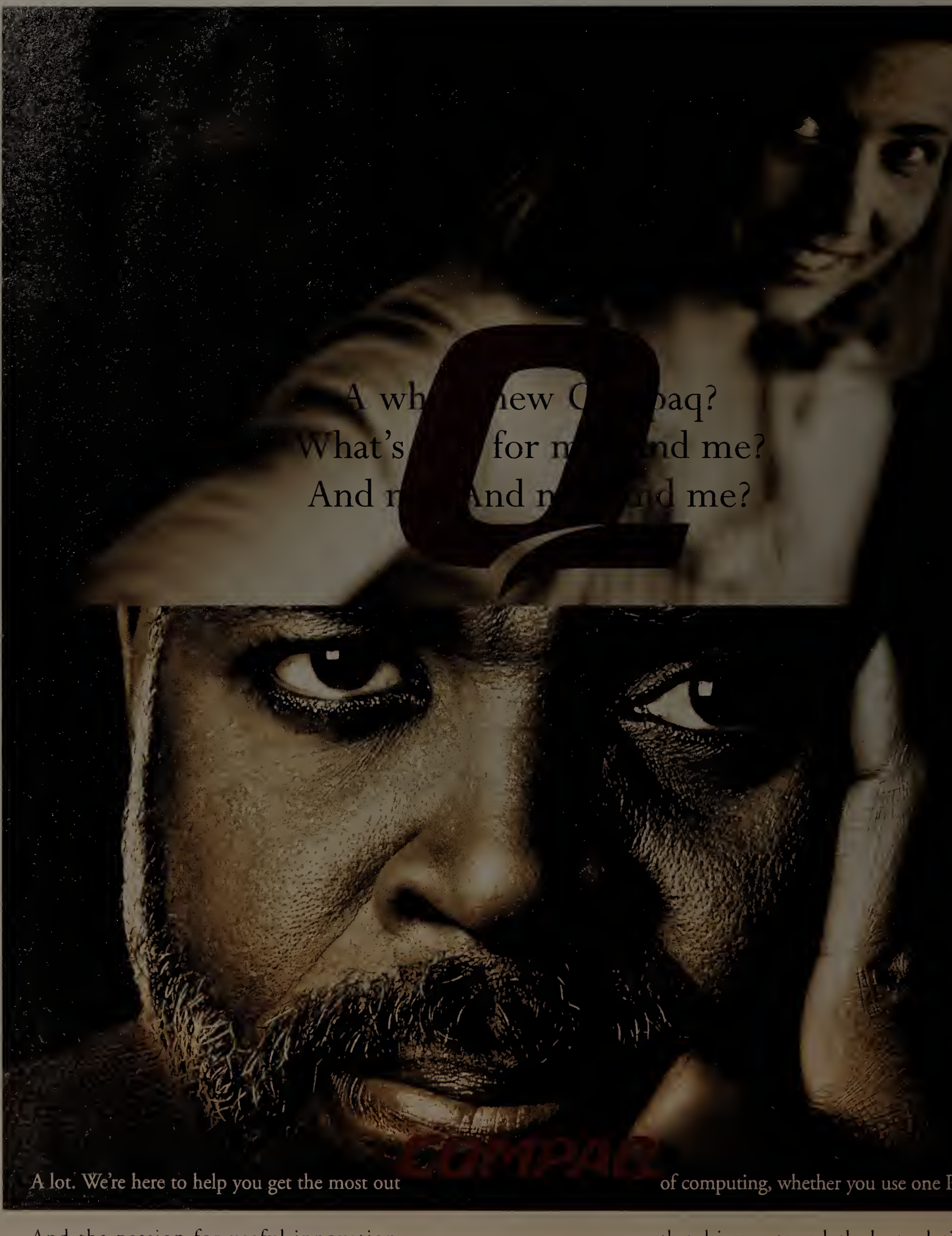
But BFI also found that "the SAP component is the smallest piece of the pie," says Tom Veronie, the company's manager of telecom and equipment services. A move from the mainframe world of terminals to the client/server arena of PCs meant users for the first time had office automation software, e-mail and Internet access.

Now when a BFI employee working on an SAP screen hits the help button, it launches a browser which connects the user to a Web server in Houston. From there, the user can access self-help screens or training courses, Veronie says. Trying to anticipate that type of demand is difficult.

Because the whole point of an ERP system is to integrate all business processes onto one database, employees who may have been on different systems or on no system at all are now connected. That means an explosion of file transfers and attachment-laden e-mails in quantities that

*Continued on page 50*





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Continued from page 47

are virtually impossible to predict. "Those are the things that are scary from a WAN perspective," Veronie says.

## Fighting back with infrastructure

In its 500 remote offices, BFI traditionally used shared 10M bit/sec Ethernet LANs, while the 1,000 users at corporate headquarters in Houston are connected via 16M bit/sec token ring. So far, Veronie has installed Ethernet switches at 50 of the largest branch offices, allowing him to upgrade from shared to switched connections "as soon as the capacity is threatened on any particular segment." Veronie has Remote Monitoring and RMON2 probes on every LAN segment in those remote offices to gauge capacity.

The plan is to eventually migrate all remote and headquarters users to switched Ethernet desktops, which should provide performance and reliability gains. Plus, it's cheaper and easier to support and maintain dedicated links rather than shared connections, Veronie says.

For the wide area, Veronie was forced to abandon his private multipoint SNA network because it would not support IP, which is required under SAP R/3. Instead, he went with 56K bit/sec frame relay links to 500 remote locations, using multiprotocol routers to wrap the SNA traffic in IP.

But the onslaught of WAN traffic was much greater than anticipated at some locations, so Veronie had to scramble to upgrade the 200 busiest sites to 128K or 256K bit/sec connec-

In light of those warnings, Becton Dickinson, based in Franklin Lakes, N.J., decided to replace its hodgepodge of 4M and 16M shared token ring and 10M bit/sec shared Ethernet LANs. The company will outfit 7,000 to 10,000 desktops with 10/100M bit/sec switched Ethernet links, which Freyer expects will provide enough bandwidth to handle the ERP rollout, along with browser-based and multimedia applications he may implement in the future.

On the wide-area side, Freyer says his 50 U.S. sites are in pretty good shape, but he faces the challenge of connecting 130 sites outside of the U.S. that have a variety of remote access setups. Many of these offices have "done their own thing over time," signing deals with local telephone companies.

Freyer's task is to migrate those sites to frame relay. He figures it will cost about \$1.5 million in capital expenses to get the 130 sites up to speed and to create a dial backup system — a requirement because mission-critical information will be flowing over those links. And the \$1.5 million doesn't cover recurring monthly expenses, which Freyer hasn't nailed down yet.

Becton Dickinson's plan is to provide small sales offices with 64K bit/sec frame relay, or possibly ISDN; mid-size offices with fractional T-1s; and large manufacturing sites with T-1s or higher. Traffic from all sites will feed into dual DS-3 lines in the data center.

By contrast, Brother Industries found it didn't need a major upgrade to its shared 10M bit/sec Ethernet LAN when it rolled out R/3, says system analyst John McBride. In fact, one year into the SAP rollout, McBride puts his network utilization at about 10%. The only change he made was to add Cisco LAN switches, which allow him to prioritize mission-critical SAP traffic above Internet and e-mail transmissions and to segment the network so power users can get more bandwidth than infrequent users.

McBride says he keeps tabs on network activity using Hewlett-Packard OpenView, which allows him to trace heavy network usage back to a particular desktop. He then matches up the bandwidth usage with the person's function within the company to catch any anomalies. For example, an engineer

could be expected to use significant bandwidth, but if the culprit is a receptionist, he'll investigate to see whether the network is being used inappropriately.

While the ability to ration bandwidth is nice to have, for now McBride says his 10M bit/sec Ethernet LAN has plenty of capacity to run SAP and all other applications, giving him no reason to monitor the usage rate of particular applications.



Phil Freyer is busy with a \$100 million SAP rollout at medical products maker Becton Dickinson.

## In the data center

While LAN and WAN requirements may vary from company to company, every ERP implementation requires the creation of a new backbone network that links multiple servers in the data center. The data center connectivity options are ATM, FDDI or Fast/Gigabit Ethernet.

A typical data center might include the main transaction processing database server, a backup for disaster recovery, a server for developing new

applications, a server for testing, and multiple application servers.

In addition, once business units within the company realize all this data is sitting in a single logical database, they put in requests for separate tracking and reporting systems specific to their needs. That often leads to new data center servers.

Bay Networks (now part of Nortel Networks) installed SAP R/3 in 1996, and now has 200G bytes of ERP information stored on its main database server. Between live backups, online reporting systems and a variety of testing and development projects, the entire database has been replicated on an additional 10 servers in the data center, according to Pierre Pellissier, corporate network manager at the Santa Clara, Calif., company.

Additionally, subsets ranging in size from 20G to 50G bytes are replicated on 10 other servers to supply raw data for various downstream reporting and data analysis systems. These servers all live in the data center and the data is updated several times per week.

Pellissier says application development people come to him just about every quarter with a new reporting system that requires support from his group. "I don't think anybody, when we rolled out SAP, would have predicted where we were going

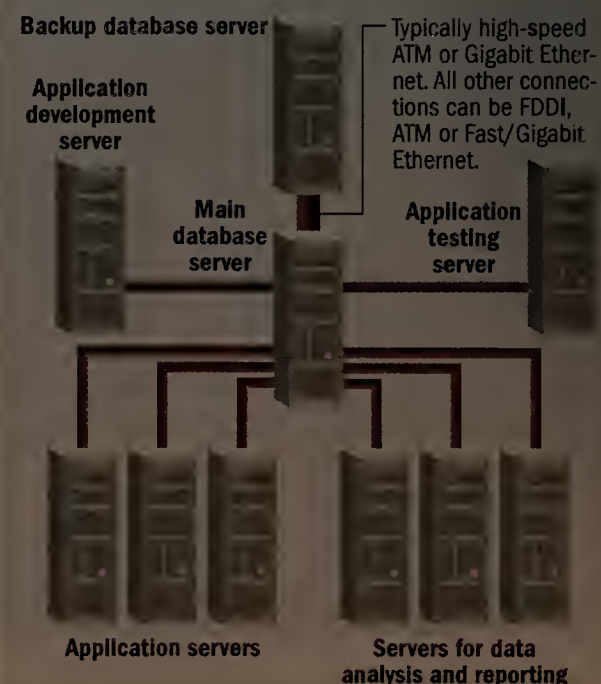


One year into a SAP rollout, John McBride says utilization on Brother Industries' 10M bit/sec Ethernet is only 10%.

tions. The result has been "subsecond response times," he says.

Phil Freyer, director of global network architecture at Becton Dickinson, hired outside consultants to help determine his network needs. He also interviewed other SAP customers and heard the familiar refrain: ERP systems and their accompanying applications "breed usage of the network."

## TYPICAL ERP DATA CENTER





to be in a couple of years in terms of the numbers of reporting systems," he says.

"It's not just a database server and some application servers and away we go. The reality is that you're going to want to use that data in different ways that SAP doesn't natively support, so you'll probably spin out information warehouse environments or reporting environments," Pellissier says. "All of that translates into infrastructure; more hardware, more networks, more backup time, more systems analysts to support it."

Originally, Bay used FDDI in its data center, but quickly maxed out on the 100M bit/sec technology. The company now runs Gigabit Ethernet from the database server to the backup server, which has cut backup time by a third. And it runs 100M bit/sec Ethernet from the main database server to the other data center servers.

Storage Technology (StorageTek) has a similar SAP R/3 implementation story. It started with FDDI in the data center backbone, then upgraded to ATM for increased throughput and better response time, says IT architect Gary Osburn. "The warning I would give people is that traffic between application servers and the database server is more than we expected," he says.

## Get more online:

We've established links to the following:

- The SAP Resource Center, run by consultant Adrian Bell.
- The American SAP User's Group site.
- Separate Fan Club and User Forums for SAP, Baan and general ERP users.

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Osburn adds that once the bugs were worked out, ATM proved to be robust and reliable. But if he had to do it all over again he would probably go with Gigabit Ethernet. "It would allow us to reuse skills we had already built up." There was a steep learning curve with ATM, he says.

StorageTek has a total of 29 servers in the data center, including one central database server, eight applications servers and a variety of backup, training, development and testing servers.

## Worth the trouble

The managers agree that an ERP rollout is a huge undertaking, but the benefits to the company are enormous.

McBride says the SAP system brought more structured business processes to Brother Industries, increasing the availability of information and enabling the company to track and forecast as it never could before.

BFI, which has just completed its rollout, spent \$15 million on PCs, servers, hubs, routers, cabling and other net-

work gear. In addition, the company had to beef up its help desk and conduct a massive training program.

But the company now has a standardized way of gathering and analyzing information. "It actually works. We're somewhat surprised," says Veronic

can-didly. "If you plan, and you're absolutely loyal to the standards, and the whole organization has the discipline to follow suit, then you can successfully do it."

As Freyer of Becton Dickinson wraps up the planning phase and moves toward implementation, crunch time is

approaching. "We feel the pressure, but we feel like we know what we're doing," he says.

Weinberg is Network World's features reporter. He can be reached at [nweinber@nww.com](mailto:nweinber@nww.com).

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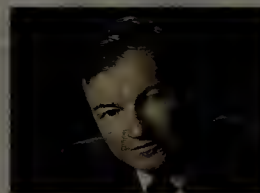
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### SEMINAR AGENDA

8:00 - 9:00 Registration and Continental Breakfast  
9:00 - 9:30 Segment 1 — LEVEL SET  
9:30 - 10:30 Segment 2 — THE DECISION DRIVERS  
10:30 - 11:00 Break and Product Information  
11:00 - 12:15 Segment 3 — GIGABIT ETHERNET STRATEGIES  
12:15 - 1:15 Complimentary Lunch and Product Information  
1:15 - 3:00 Segment 4 — TECHNICAL ISSUES AND OPTIONS  
3:00 - 4:00 Segment 5 — THE FUTURE



# REVIEW

VITALSIGNS SOFTWARE'S VITALSUITE IS  
A WORLD CLASS DIAGNOSTIC TOOL KIT.

# Agents make suite diagnoses

By Bob Currier, Network World Test Alliance



Web site found. Waiting for reply. And waiting. And waiting. And waiting...

Look familiar? Do you often wonder whether the problem is with your local network, the ISP's backbone or the content provider's servers? Until now, that's been a tough question to answer. However, you can now get a new view into the internal workings of your network with VitalSuite 2.0 from VitalSigns Software (which International Network Services last month announced plans to acquire). As soon as we installed VitalSuite, identifying overloaded servers, slow Domain Name System (DNS) responses, missing Web pages and bogged-down client CPUs was easy.

VitalSuite consists of VitalAgent client software and complimentary servers VitalAnalysis and VitalHelp. During the course of our tests, we let our clients gather data for several days while we monitored the reports on the VitalHelp server. Several times we suffered network outages, which were duly noted by the VitalAgents. At one point, our primary ISP suffered a fiber cut in the Washington, D.C.

area that significantly degraded network performance for several hours. The slowdown was quickly reported by VitalSuite.

The bundle earns our World Class Award and a strong recommendation for its effectiveness, ease of installation and excellent documentation.

## Network prognosis

Deployed on users' workstations, the VitalAgent clients monitor and diagnose network

problems (see Figure 1). A dashboard display tracks activity, speed and delay in three panes.

VitalAgent's activity pane monitors the performance of applications and displays a connectivity diagram that traces a path from the client to the server. Problem areas are highlighted in red, and if you double click on those areas, you get instant feedback on the nature of the difficulties. The application being monitored is displayed at the top of the activity pane.

The speed pane reveals how much data is currently flowing on the network in kilobits per second. Current and average bandwidth consumption are displayed, and a slick bar graph shows the ratio of sent to received data.

The delay pane highlights network or server slowdowns, and attributes a percentage of the total delay to each. We found the delay pane to be useful in providing a quick pointer to the source of congestion.

We were skeptical of VitalAgent's ability to accurately measure network traffic, so we decided to put it to the test. We downloaded a 40M-byte file through our 1.5M bit/sec cable modem connection while watching the dashboard. VitalAgent reported 1.5M bit/sec of traffic, the maximum available bandwidth.

We then fired up a second download on another machine and watched both clients immediately report a drop to 750K bit/sec — a 50% reduction in throughput. A third down-

Figure 1: VITALAGENT



On the client side, VitalAgent monitors and diagnoses network problems.

Activity pane displays connectivity diagram.

Speed pane tracks current and average bandwidth consumption.

Delay pane measures network and server slowdowns.

load dropped the average bandwidth consumption to 500K bit/sec.

We found only one application that appeared to confuse VitalAgent: RealPlayer Version 5.0. After an initial burst of activity, the current bandwidth display dropped to zero. VitalSigns technical support indicated that RealPlayer Version 5.0 may use a different TCP port number than earlier versions.

## Record keeping

Once VitalAgent performs its monitoring and traffic-tracking tasks, the VitalAnalysis server collects the data at regularly scheduled intervals and produces a

## Score Card

	Performance (40%)	Administration (30%)	Ease of use (10%)	Installation (10%)	Documentation (10%)	Total score
VitalSuite 2.0	9 x .40 = 3.60	9 x .30 = 2.70	9 x .10 = 0.90	9 x .10 = 0.90	10 x .10 = 1.00	9.10

Individual category scores are based on a scale of 1 to 10. Percentages are the weight given each category in determining the total score.



comprehensive set of charts and reports. We were impressed with the amount of detail available. For example, application heat charts summarize the performance conditions experienced by each application, including packet loss, throughput and delay (see Figure 2).

The heat charts are tables with spherical indicators that are color-coded according to the severity of a problem. Client reports list information about each client, such as IP address, CPU type, memory and operating system. Server reports summarize the health of servers monitored by VitalAgent clients.

You can view reports by accessing VitalAnalysis' Web server with a Netscape or Microsoft 4.0 (or higher) browser and a monitor capable of at least 1024x768 pixel resolution. This integral Web server doesn't have many of the enhanced features of Microsoft's Internet Information Server (IIS), although it works fine for the initial VitalSuite installation. We recommend installing IIS once the system is in production mode.

VitalHelp chronicles each client's transaction history, providing a cleanly organized log of network, server and application problems. The VitalHelp console runs under Windows NT 4.0 and is divided into three areas (see Figure 3).

The severe events frame presents the operator with a digital display indicating the number of severe events on an application-by-

application basis, currently in the queue or those that have occurred within the last one- or eight-hour period.

The group frame displays all active clients sorted by application, and color codes their current status. We found this display to be particularly useful; we could immediately see how many clients were reporting problems with an application.

The active events log shows the status of current events, the number of times each problem has been seen and the ticket number assigned to each problem. Quick diagnosis is available by double clicking on an event.

The VitalHelp console supplies a rich suite of test tools, including a packet-capture feature. Administrators can retrieve the client network configuration as well as run traceroutes and DNS queries. While no substitute for a full-fledged packet analyzer, the packet-capture function is unique, and the inclusion of such a feature demonstrates why VitalSuite is a standout package. One caveat: The supplied settings for alarm thresholds are very sensitive.

With a large user base, it would be easy for the VitalHelp operator to become overwhelmed by noncritical warnings such as "Web page not found" or "DNS lookup failed."

## Getting started

Installing VitalSuite was a snap. We followed the documentation and encountered no major difficulties. To ensure a clean installation, we formatted our server's disk and loaded a fresh copy of Windows NT 4.0, Service Pack 3.

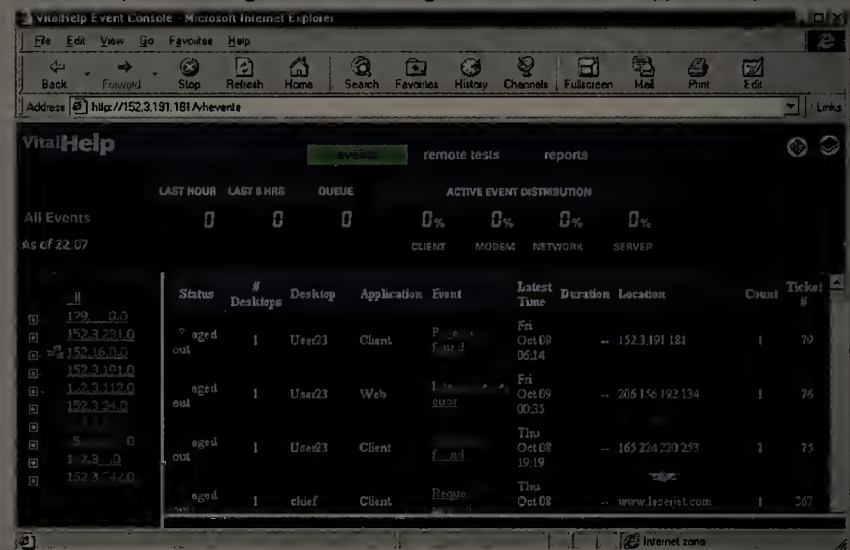
VitalAnalysis and VitalHelp really put the server's hardware to the test. We recommend a minimum 350-MHz Pentium II with 128M bytes of RAM.

VitalSigns provides all the necessary software, including Web server, reporting tools and Sybase's SQLAnywhere database. We used the generic installation options for each package.

We installed VitalAnalysis and VitalHelp on the same server, a configuration that Vital-

**Figure 3: VITALHELP**

The VitalHelp fault-management software logs network, server and application problems.



Signs doesn't recommend for a large production network. We noticed the CPU load on our server reached 100% during report generation, so we recommend using different servers if you plan to install more than 25 VitalAgent clients.

VitalSigns provides the best documentation we've seen in a long time. The manuals are clearly laid out, cover a wide range of topics and provide a large number of illustrations and screen shots. With these guidebooks at your side, it's unlikely you'll need to contact VitalSigns for any but the most complex questions.

Overall, we were extremely impressed with the quality of this software. Installation is simple; documentation is excellent; reports are concise; and clients operate transparently. For network administrators and help desk managers responsible for large enterprise networks, VitalSuite is a must-have package worthy of our World Class Award.

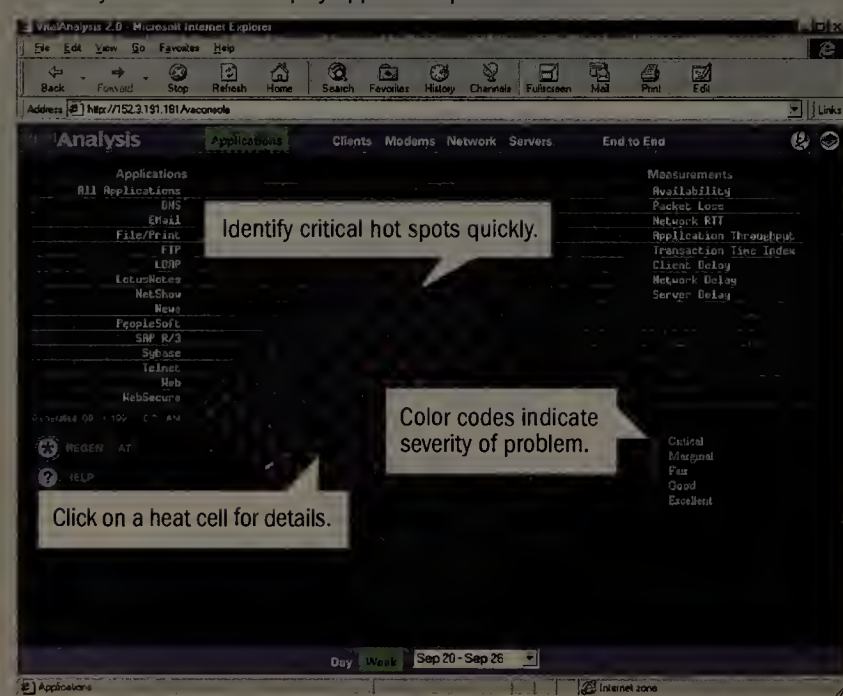
Currier is director of data communications at Duke University in Durham, N.C., and the 1998 Grand Prize winner in the Excellence in Campus Networking competition sponsored by CAUSE, a user group for computer professionals in higher education. He can be reached at [robert.currier@duke.edu](mailto:robert.currier@duke.edu).



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**Figure 2: VITALANALYSIS**

VitalAnalysis' heat charts display application performance conditions.



## How We Did It

We installed VitalAnalysis and VitalHelp on a Dell Optiplex 400-MHz Pentium II with 128M bytes of memory and 8G bytes of disk space running Windows NT 4.0, Service Pack 3 and the NTFS file system. The VitalAgent client was deployed on nine workstations, ranging from a 266-MHz IBM Thinkpad 600 running Windows 98 to a Dell 166-MHz Pentium with Windows NT 4.0 and 32M bytes of memory.

For several days we scattered the clients across a 20,000-node test network to provide the software with a variety of network conditions. We connected the server and several clients by cable modem to the main network at 1.5M bit/sec. Two clients had an 8M bit/sec Multi-Megabit Data Service feed supplied by GTE, and the remainder were on switched 10M bit/sec ports.











## Hire an automated assistant

In the movies, important executives have secretaries who screen their calls, know where to find them in case of urgent messages and keep their schedules up-to-date. In real life, with modern telephones and computer applications, you can do 80% of what a secretary used to do. Stop the presses — General Magic's Portico can handle the other 20%.

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Quick takes on high-tech toys  
by Test Center Director  
**Lee Schlesinger**

where to find you when callers ring. But what's truly remarkable about Portico is the way callers interact with it. While it has a Web interface, most of the time you access

Portico by talking to it over the phone. That makes Portico an incredibly useful service for highly mobile professionals.

The best way to use the service is to distribute your personal Portico toll-free number as your primary point of contact. When Portico picks up, a voice asks for the caller's name and asks whether the person would like to find you or leave a message.

Your contacts can also send e-mail to your Portico account or forward your e-mail to it. You can set rules to page you when important e-mail or voice mail arrives.

That's what Portico does for people who want to contact you. What can Portico do for you? Besides e-mail and voice mail, Portico includes an address book, calendar, news clips and delayed stock quotes. You can synchronize your current contact databases with Portico using Starfish Software's provided TrueSync Plus software.

To look up a contact, say, "Open my


address book. Find Cathy Wright." Portico responds with the person's name, company and phone number, and will dial the number upon your request.

I had no problem learning how to talk to Portico. Nor did Portico have any trouble understanding me when I spoke normally.

The one feature Portico lacks is voice data entry, so that not only could you access your appointments, but you also

could add new ones. Given the rate at which speech recognition technology is taking off, I wouldn't be surprised to see such capabilities within the next year.

But even as it stands today, Portico is a valuable and affordable tool for anyone who spends a lot of time out of the office.



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# Management Strategies

## Risky business

*Do you have what it takes to be your own boss and succeed?*

**E**nough was enough for Onami Bernheim. Managing the network for the Legal Aid Society of San Diego after a stint in the Marines as a computer technician sent him over the edge.

"Most people in charge are short-sighted when it comes to computers. They don't think about how computers will be integrated into their long-term goals," Bernheim says. Although Bernheim was thinking 15 years ahead, his bosses weren't.

As an IS manager for a small company, Leo Bletnitsky ran the show. He left for a better paying position at a bigger company. Unfortunately, the new job didn't entail more responsibility.

"It was a major brain-destroying experience," Bletnitsky says. "The company had a union mentality. Even if I didn't have anything to do, I couldn't work on another project." Money didn't make his world go around — Bletnitsky wanted self-respect as well.

Bernheim and Bletnitsky's personal motives led to the same results. Bernheim founded Computer Network Solutions, a San Diego network integration firm, and works with his brother. Bletnitsky is on his own at LBA Associates in Oakland, Calif. Each loves the work but sometimes struggles with being an entrepreneur.

*By Loretta W. Principe*

If you fantasize about striking out on your own, one thing probably keeps nagging at you: Do you have what it takes to succeed? One venture capitalist and four guys with big dreams and real profit-and-loss statements offer some insight into being your own boss.



**Tired of someone else calling the shots,** Onami Bernheim took a gamble and founded Computer Network Solutions, a network integration firm.

the end-to-end services market niche. "You must understand the market and the competition to differentiate yourself," Musallam says.

Mike Hadley is cut from the same cloth. He, too, left a career-track IT position with a big company to run his own IT consulting firm. "I saw a big hole in the market," says the president of Off-Hours Consulting (OHC) in Cambridge, Mass.

Hadley believes many network consultants focus on the issue at hand and don't consider their clients' future interests, so OHC differentiates itself from the competition by serving as a decision maker for its clients. His firm also focuses on proactive maintenance of client networks.

With the odds stacked against a new company's survival, only the toughest nut won't crack. "You have to be aggressive, work hard and never settle. It takes total commitment," Hadley says. You'll never hear Hadley or a colleague say something can't be done.

No problem is insurmountable if you apply Hadley's three Rs — resilience, resources and relentlessness. "Use these and you can get anything done," he says.

Commitment to his business and self-discipline keep Bernheim moving forward during the tough times. Until recently, he rarely saw his family. He logged 14-hour days, six days per week to make his company a go. Now that he has a business partner, Bernheim has been able to reduce his schedule to 60 hours per week.

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3. Do you have willpower and self-discipline?
4. Are you ready to work long hours?
5. How will your loved ones react to stress and separation?
6. Right or wrong, can you make the big decisions?
7. Are you prepared to lose your savings?
8. Are you risk-adverse?
9. Do you enjoy competition?
10. Can you keep your head while others about you lose theirs?

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John Nesheim, president of Saratoga Venture Finance in Saratoga, Calif., and author of High Tech Start-up, spends long hours preparing high-tech company founders for the venture capital funding process. Some start-ups fly high, but most will crash and burn.

Only one in six million companies makes it to the pinnacle of success — an initial public offering, Nesheim says. At 15%, the odds are better that a company will be bought out. The remaining businesses are adrift. "No one wants them," he says.

Nesheim looks for one thing in an IT start-up's business plan: an unfair advantage. "You've got to know without hesitation what you do better than the competition," Nesheim says. An unfair advantage is difficult to come by for network consulting and other service businesses, but it's the name of the game. For example, Cisco's strength is its corporate culture of passionate commitment and drive to win sales, Nesheim says.

Rami Musallam left his job as vice president of networking at Morgan Stanley in New York in January 1996 to start network services firm Total Network Solutions. He wanted to home in on

### Keep charging forward

The buck stops here isn't just another adage for IT entrepreneurs — you have to live by it, Hadley says. When you make a bad decision, figure out what it cost, determine the best way to correct the mistake and learn from it, he advises.

Musallam believes perseverance is one trait all successful leaders have in common. He says a leader must adhere to a vision of success and implement that vision within an organization.

"What that means for me is building a world-class organization," Musallam says. "You have to have a dream and execute it."

So after all is said and done, why would someone leave paycheck security for the risks of a low-pay — or even no-pay — start-up business? Unlimited potential is the big appeal, Bletnitsky says. "I can go broke or be Bill Gates," he says. "I didn't want to be a worker bee forever."

*Principe is a freelance writer and attorney in Springfield, Va. She can be reached at [LWPrincipe@mailexcite.com](mailto:LWPrincipe@mailexcite.com).*



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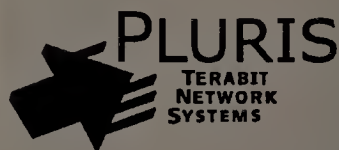
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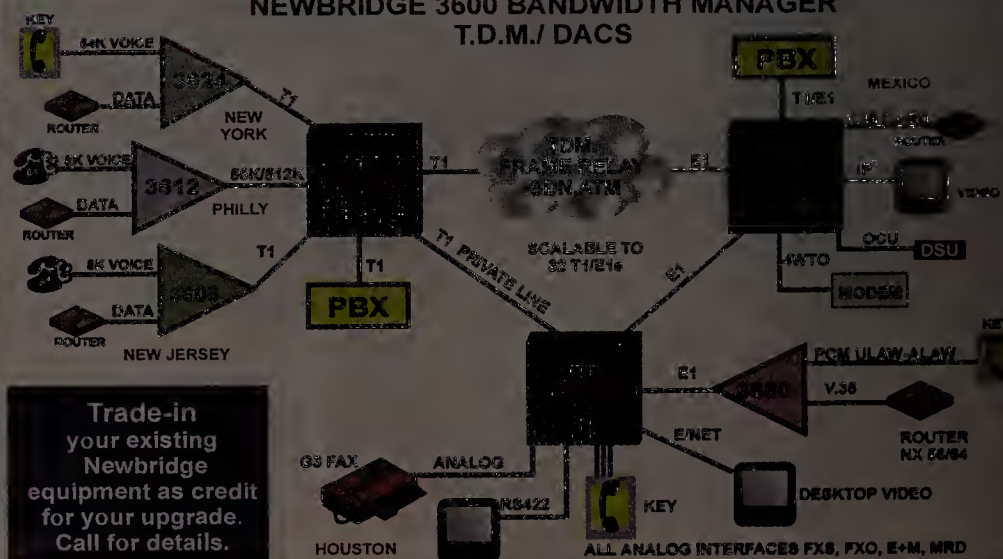
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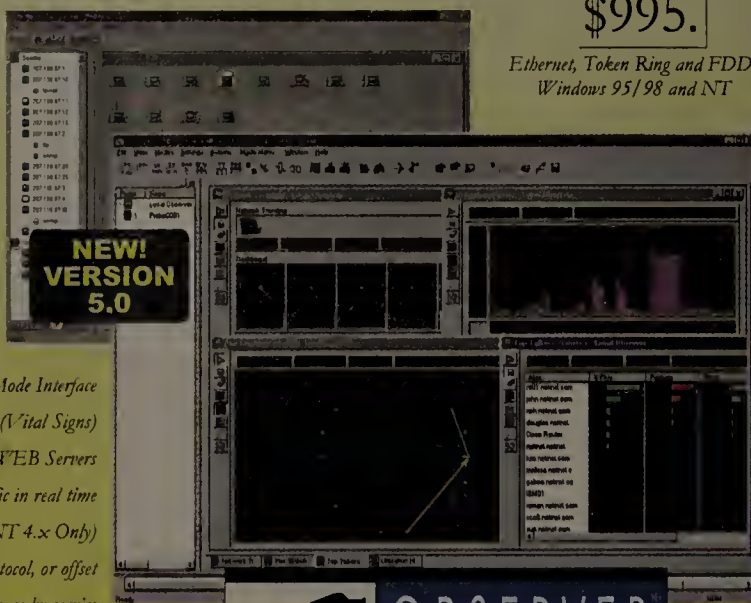
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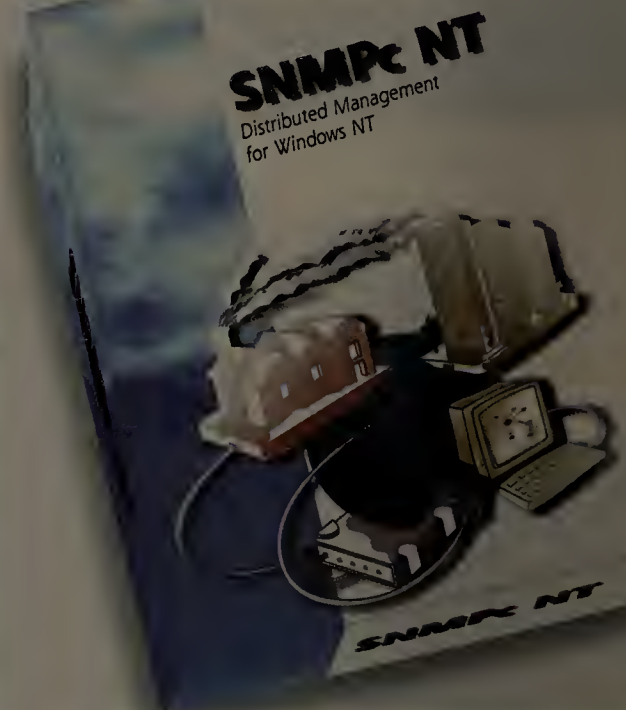
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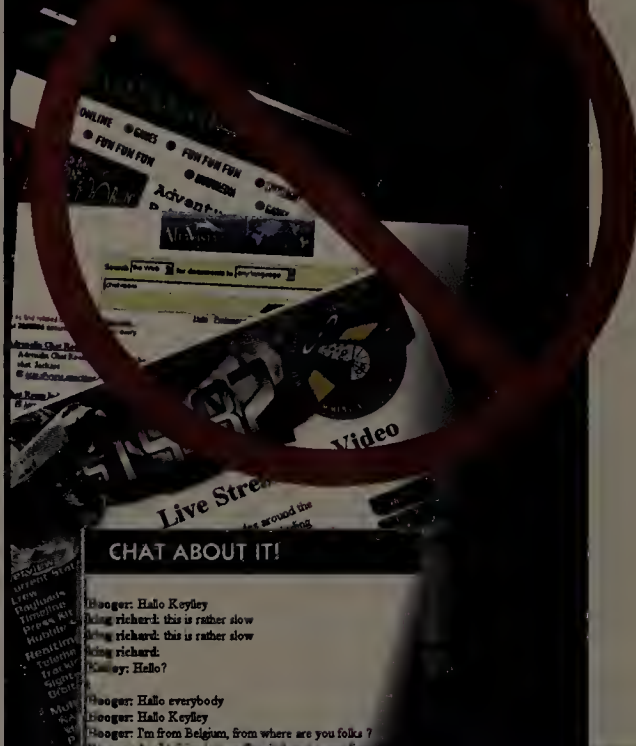
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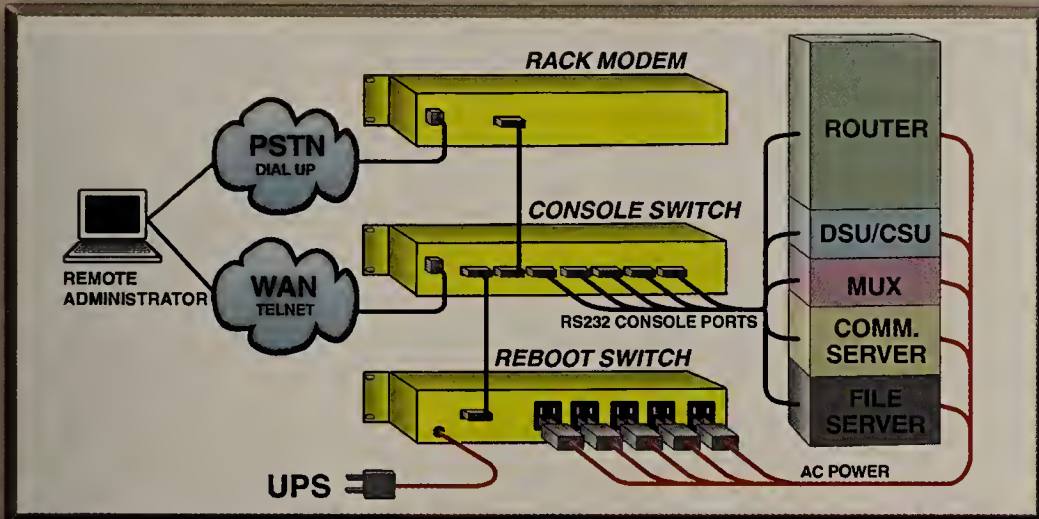
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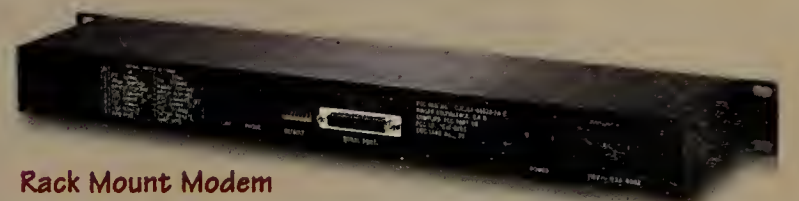
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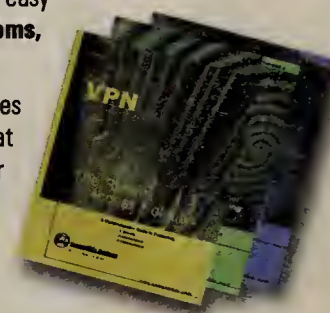
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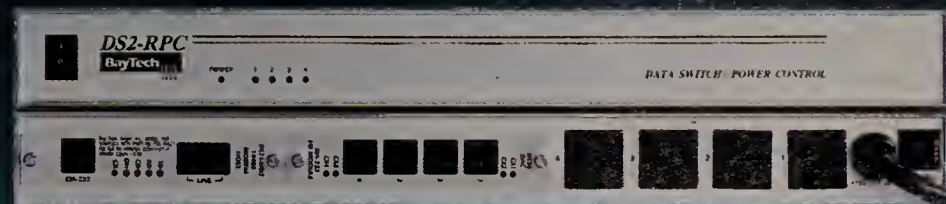
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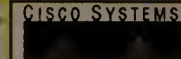
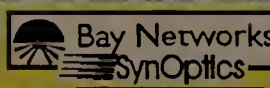
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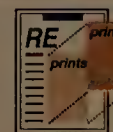
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## Schmidt

Continued from page 19

zations can do stuff. And until we shipped NetWare 5, no one would believe our plans for the Internet because they weren't tangible.

Now that we've shipped NetWare 5, we can go to companies that wouldn't look at us in the past because we didn't understand the need for interoperability that the Internet has forced. Now we can say that not only do we understand it, but let us show you how we work with your networks. It's now extremely

easy to demonstrate interoperability with all of these other players because the native protocol is IP and all the services are layered. We can now walk into the boardroom, do an effective demo, and say, "Let's do this deal now."

**Why have you turned your marketing efforts upwards from your traditional network manager base to the CIO level?**

That is a new thing for us. While we had this great channel, we didn't call on CIOs. And in the last few years, the buying decisions have been elevated from the systems guy

to the CIO. The people we need to get to have either never used a Novell product or don't know why a directory service is useful.

Ultimately, it is not going to be profitability or revenue growth that will change the belief in our company among folks at that level. Things will change when they see us driving a space in the market that no one else is driving. In the minds of the average user there are big gorillas — such as Intel, Microsoft, whomever — that occupy market spaces. Finding a space and trying to innovate in it will be how we get [noticed by CIOs].

We are going to do that by delivering directory-based applications that run on the Internet and change the way people think about identity. Once that is done, then these questions will get a lot easier for me. That will take the question about our credibility right off the table.

**You once said ZENworks was a good idea you found hiding in the labs. Have you found any other good ideas**

**that can help move NDS along?**

Every month I still find these little gems. For example, we have technology in our lab in India that is essentially a client-side directory. What it does is talk to the big directory and it has information about you and all of your preferences.

We are developing a set of caching appliances whose caching performance is a hundred times better than what anybody else has.

And I haven't even talked about the next version of the directory. Let's say that the current directory is more scalable than anyone else's and the next one is even more scalable than that. The way that is achieved is by changing the underlying data store.

We cull the company for these technologies on a monthly basis, and we just put them together.

**Lucent recently agreed to adopt NDS. Is that deal important in itself, or more so as leverage to get other hardware vendors such as Cisco to sign on?**

Lucent is clearly one of the two or three companies that will hold ground in the datacom market. Everything is going to consolidate, and Lucent will be one of the consolidators. Network infrastructure is a game of scale. Lucent



do similar deals with other vendors.

**What about systems management? If you integrate the directory with other systems, don't you run into problems about which is going to be the master?**

Let's think about the right architecture. At some level in networks everything is a manageable object. Your e-mail is a manageable object, your router, your PBX, your desktop, your applications.

They are all manageable objects. Why is there not a single object data store that any set of management tools can tap into?

**How many years is it going to take for an enterprise network to get to a single directory service?**

It takes a while. The big customers we have are rapidly putting every PC on NDS — 20,000, 30,000 and 40,000 PCs. This is because once they have them all on NDS, they can count stuff. That is what they are really trying to do. [The move to a single directory] is basically driven by the need for asset management. It is not yet driven by manageability reasons; it is driven by cost control/inventory kinds

of reasons.

Every customer I talk to tells me their network costs are out of control because stuff doesn't work together: "I need something to manage all of the weird variants of clients"; "I need server-to-server management"; "I need to view everything as a single, coherent network and decide what goes where." That is how they think, and that's what we're doing. ■



## 3Com reveals its SAN plan

By Deni Connor

Santa Clara, Calif.

3Com will jump into the storage-area network fray later this year when the company begins shipping its first Fibre Channel switches, hubs and PCI host bus adapters.

In partnership with Data General's Clariion Advanced Storage Division, Legato and MTI, 3Com will provide a SAN offering that incorporates hubs, adapters, backup software, tape libraries and RAID

disk subsystems.

3Com last week announced the line of StorageConnect PCI-based Fibre Channel products. The company would not give details on the individual configurations, port densities or prices of these products. 3Com's Fibre Channel products, like the company's other products, can be managed via 3Com's Transcend software.

SANs rely on three components to offload backup and recovery operations from the

server: the network infrastructure; the storage peripherals; and the software used for backup, migration and archiving. 3Com is among the first network infrastructure vendors to offer Fibre Channel products that link storage to the network infrastructure. These products will operate in Windows NT, Unix (primarily Solaris), NetWare and legacy environments.

"The entrance of any network vendor, in this case 3Com, into the SAN space legitimizes the SAN industry," says Anders Lofgren, senior industry analyst at Giga Information in Cambridge, Mass. "3Com brings to the table great network experience that none of the traditional storage vendors in this market do."

3Com, Lofgren argues, faces a challenge integrating its network gear with a technology the firm is unfamiliar with — storage. And although network administrators are familiar with 3Com's products, storage administrators are not. "It will be interesting to see the type of reception 3Com receives with those individuals," Lofgren says.

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has enormous scale.

The reason this deal is important is that it gets this notion of identity and manageability into the high end of Lucent's product line with their Cajun switch. That is where all of the new and interesting services get built first. And then the NDS integration will be propagated throughout the rest of their products.

Obviously, we would like to

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**This week's question:**

**Name the movie actor now hawking services for MCI WorldCom.**

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## Router vendors

Continued from page 1

expect to buy from carriers and ISPs down the road.

We stole the Internet router executives away from the crowds of NetWorld+Interop 98 last month to chat with them about how they plan to change the Internet as we know it. Around the lunch table were five of the Internet's brightest: David Bernstein of Pluris, Mukesh Chatter of Nexabit Networks, Ashraf Dahod of NetCore Systems, Mike Grady of Argon Networks and Surya Panditi of Avici Systems.

(Yes, Juniper Networks CEO and Interop keynote speaker Scott Kriens was conspicuously absent from our table. We did invite him because Juniper and its \$62 million in venture capital have generated much of the buzz around superfast routers, but we have to admit our invites went out a bit late.)

A quick survey around the table revealed that the five vendors represented had garnered a whopping \$185 million on their own, with funding ranging from \$14 million for NetCore to \$72 million for Avici. Even so, we insisted on paying for lunch.

The CEOs said they need that kind of capital to build products required by service providers to handle ever-increasing traffic loads. "[Big investments in Internet router companies] are a



**"You've got to merge voice onto the data network — and to do that, you've got to guarantee the bandwidth on IP."**

Mukesh Chatter, CEO, Nexabit

recognition by the venture community that this is a difficult problem, and you don't solve it for the traditional 7 or 8 million bucks," said Grady, who in a previous life helped launch Stratus Computer.

It was readily apparent that these guys aren't just trying to build a new core to the Internet. They're trying to pave the way for a new Internet, one that's reliable and versatile enough to carry voice and video as well as data. They realize that enterprises aren't going to trust carriers to transport their most critical traffic — unless the Internet router vendors can make devices as reliable as central office voice switches are today.

"The requirements for availability, reliability and serviceability — all the things that matter to carriers — are what will enable enterprises to move their traffic to carrier

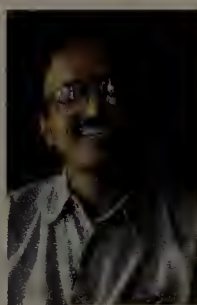
services such as VPNs," said Panditi, who complimented us on our choice of a restaurant he likes to call Veni, Vidi, Avici.

Another quick survey around the table showed that none of these companies has yet shipped a product. The earliest of their high-speed Internet backbone routers will start trials by year-end, and others won't ship until well into 1999.

We recognized that by inviting our guests to lunch rather than dinner we'd need to spark conversation by raising juicy topics rather than serving cocktails and wine. The topics of convergence and quality of service (QoS) did the trick.

The group was split on whether carriers would be tempted to send voice traffic on the same IP networks that carry data if the data nets were as reliable as traditional voice networks.

"The money's coming from



**"There's not the right kind of intelligence [in current equipment] for carriers to do the traffic engineering they need to do."**

Ashraf Dahod, CEO, NetCore

voice right now," said Chatter, whose denim Nexabit shirt bore a striking resemblance to Dahod's NetCore shirt. He added that to send money-making voice over a data network, service providers must first be able to guarantee a certain amount of bandwidth for voice — and that means shoring up IP networks.

"The jury's still out on whether this converged network is going to exist," said Bernstein, in between bites of his gamberetti. "There's still this problem right square in front of the carriers: They have orders an arm's length long to build IP networks, and they can't fill them. Whether they run voice or not, there is a lot of IP demand."

"No question. I'm not talking about convergence as a goal," Chatter retorted. "It can be a viable alternative only if the carriers can make money on it."

### On QoS

All the vendors in this game have some kind of story about QoS, where they can ensure that high-priority traffic gets through the network faster. The carriers say they want QoS — but would they even use it?



**"The requirements for availability, reliability and serviceability — all the things that matter to carriers — are what will enable enterprises to move their traffic to carrier services such as VPNs."**

Surya Panditi, CEO, Avici

NetCore's Dahod said the primary focus for carriers now is just "doing more of what they are doing now at a lower cost and at a faster rate."

"You've got to go talk to the guys who are running these networks," said Bernstein, an industry veteran who has done stints at AT&T and The Santa Cruz Operation, among other companies. "The guys who have Cisco 12000s now — they're not using tag switching. They're hardly using any of the features." He pointed out that service providers are installing a lot of these devices to fill their high-band-

width needs.

"It's quite possible it's the wrong type of intelligence in the 12000," Dahod fired back. "There's not the right kind of intelligence for carriers to do the traffic engineering they need to do to bring business customers into an Internet

building routers based on IP. But they fully realize their devices will have to play well with ATM gear if they are going to fit into a carrier network.

"ATM switches absolutely will play" in the network for some time to come, Panditi said. "The customer is going to decide" how it

will migrate from ATM to IP.

"We sometimes get caught up in our own hype," Dahod acknowledged. "We all grew up in the IP world, but nothing takes over overnight."

Grady said the IP community can learn from ATM product and service vendors, which he said fell into the trap of developing a solution and then looking for a problem to fit it.

QoS services on IP may meet a similar fate, he added.

### On sticking around

We saved for last the topic of whether these start-ups really have any chance of staying independent for long. After all, companies such as Juniper and Avici already are funded partly by the likes of 3Com and Nortel Networks.

"The big guys are sniffing around because they don't want to miss anything. That's when rumors get started," Grady said.

But the CEOs said they plan to keep their companies independent because new and old

**[Big investments in Internet router companies] are a recognition by the venture community that this is a difficult problem, and you don't solve it for the traditional 7 or 8 million bucks."**

Mike Grady, CEO, Argon

infrastructure."

While Chatter agreed that such technology is necessary, he said carriers need to address bandwidth constraints first. "If you've got a deadlock in downtown Boston, you put in a much bigger highway and you apply traffic engineering to it. But you don't do it the other way around."

### On IP vs. ATM

The vendors around the table have an IP focus, and they are

service providers have shown their willingness to buy equipment from small companies.

We don't know whether the CEOs will be proven right. But we can tell you this: Within about two years of hosting our first Gigabit Ethernet vendor dinner, three of the five original guest companies had been gobbled up. ■

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**"The jury's still out on whether this converged network is going to exist."**

David Bernstein, CEO, Pluris



The start-ups' venture funding may seem like a lot of money, but these vendors feel justified in asking for the cash.

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## Frame relay

*Continued from page 1*

For example, Reese expects the company's Holland office to save at least \$5,000 per month. The Milwaukee company makes electrical tools and supplies for the construction industry.

An MCI WorldCom Advanced Networks offering makes these savings possible. The Frame-Net Inter-Office voice- and fax-over-frame relay service will let users enjoy the savings of a converged voice, data and fax network without the headache of setting up and maintaining it.

Many business users already know that sending their intracompany voice and fax traffic over existing frame relay networks can save them thousands of dollars per year, but until now they have found little help from service providers, such as AT&T and Sprint, in supporting and managing such a service. MCI WorldCom Advanced Networks is now the first domestic-based provider to do just that.

"It's taken service providers a long time to realize that voice- and fax-over-frame relay is a valid application users want," says Tom Jenkins, a director at

also been worried about cannibalizing their voice revenue, but now their choices are: cannibalize your own revenue or someone else will do it for you," Jenkins says.

### Cisco routers at work

MCI WorldCom Advanced Networks is using Cisco 3810 routers to support its Frame-Net Inter-Office service at customers' sites. Users can connect analog or digital PBXs, key systems or standard telephones and fax machines directly to the router.

The router takes the voice traffic and compresses it into 8K-byte packets for transport over the frame relay network. Because frame relay doesn't include standard prioritization settings, the carrier recommends that Inter-Office customers dedicate a permanent virtual circuit (PVC) specifically for voice and fax traffic, says Mary Westendorf, manager of dedicated services at MCI WorldCom Advanced Networks.

Additional PVCs will not change the price of the service, Westendorf says, because users are not charged based on the number of PVCs, but on the total bandwidth provisioned.

The service includes network

Cisco 3810. "Depending on what flavor of 2500 router was deployed, users will pay about \$50 to \$75 more per month," Westendorf says.

Users need to keep two things in mind when ordering this service. First, the MCI WorldCom Advanced Network does not interconnect with MCI WorldCom's frame relay networks.

The MCI WorldCom Advanced Networks frame relay backbone, which is based on Cisco StrataCom PBX and IGX switches, comes from the CompuServe Network Services acquisition made earlier this year.

This means that if you are a current MCI or WorldCom frame relay customer, there is not a fully managed voice-over-frame relay service available for you today.

Second, this service does not come with any standard service-level agreement (SLA). But in the first quarter of next year, MCI WorldCom Advanced Networks plans on introducing standard SLAs for its Frame-Net service offerings.

### The competition

The Frame-Net Inter-Office service announcement comes on the heels of the announce-

standard frame relay service, which is \$200 to \$1,800 per month for port speeds of 56K bit/sec to 1.536M bit/sec, respectively. Users also pay \$1.50 per K bit/sec of committed information rate.

The only price difference is that Inter-Office customers need the Cisco 3810 router, which costs \$350 to \$475 per month.

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## Alteon

*Continued from page 1*

today has nine ports and an 8G bit/sec switching fabric.

For reliability, the chassis versions of Genius will have redundant components, such as power supplies and switch modules. Alteon, which currently lacks chassis-based switches, declined to confirm product specifics.

Users are looking forward to the more powerful Alteon boxes.

"A high-density switch is very important to me," says Helen Chen, distinguished member of the technical staff at Sandia National Labs. The organization is building supercomputers that will be composed of 64 PCs interconnected by Alteon's Genius switches. "The fewer the number of hops, the better," she says.

Sandia also hopes to eliminate bottlenecks to its file servers with the wire-speed, ASIC-based load balancing in the new switches, Chen says. In addition, she likes the fact that the switches support Alteon's nonstandard Jumbo Frames. Because fewer extra-large frames arrive at the server each second, the server has a lighter processing load.

Alteon has headed in a different direction from other startups that began in the Gigabit Ethernet market. Unlike Extreme Networks and Foundry Networks, Alteon has focused on developing technologies specific to server farms, including server load balancing, which distributes user requests among a cluster of servers, and Jumbo Frames.

Alteon is focused on these technologies and has stated it won't add features that route non-IP traffic. Many of Alteon's competitors plan to support IPX and AppleTalk.

Though the products sound similar in configuration to Extreme's recently announced BlackDiamond switch, Genius will be marketed as a switch for

Web-centric data center servers, sources say. The high-density BlackDiamond, by contrast, is designed for enterprise backbones.

Service providers are more likely than enterprises to use

### Upscale switching

**Sources say Alteon's upcoming data center switches will sport:**

- ✓ 180G bit/sec backplane capacity.
- ✓ More than 100 Ethernet ports of various speeds.
- ✓ Server load balancing and Layer 4 capabilities in hardware.
- ✓ Bandwidth management and security services.

Alteon switches designed to support big Web server farms, says Mike McConnell, director of enterprise management and LAN programs at Infonetics Research here.

But he also notes that in the next few years, more enterprises are likely to use Gigabit Ethernet connections to their servers. In companies that use switched 100M bit/sec LAN connections, Infonetics estimates 8% of the server connections are currently Gigabit Ethernet and the number will rise to at least 11% by 2000. Gigabit Ethernet makes up about 3% of network backbone connections today, but Infonetics says that number will triple by 2000.

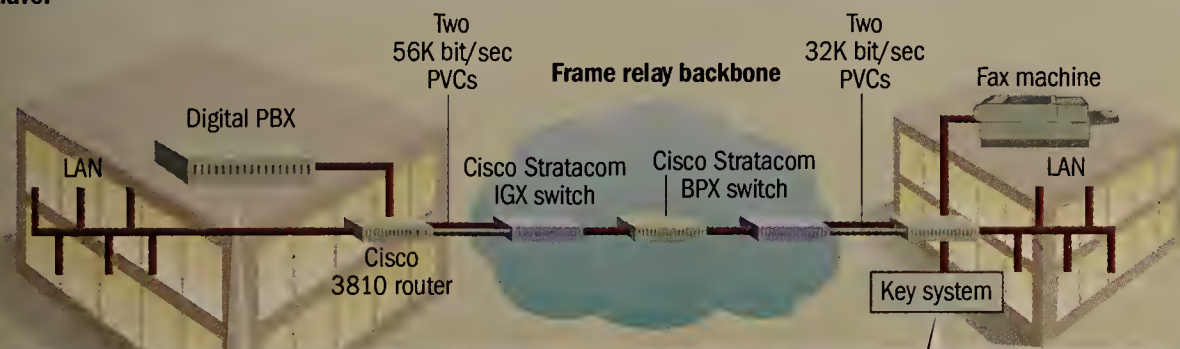
McConnell says users have been more willing to risk server connections on a new technology such as Gigabit Ethernet than to risk their backbones. But Gigabit Ethernet use will rise in the backbone as users grow comfortable with the technology.

McConnell says server load balancing won't be used much in the near term because many network managers are trying just to keep up with bandwidth demands. "A lot of people are so buried in the day-to-day operations of their network, they don't think about those things," he says. ■

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### VOICE FINDS A HOME ON MCI WORLDCOM ADVANCED NETWORKS' BACKBONE

**Users can add voice and fax traffic to their frame relay network and have the entire service fully managed, regardless of what type of PBX, key system or standard analog telephones even the smallest office may have.**



**Company headquarters** connects its digital PBX to the Cisco 3810 router via its T-1 port to a serial port on the router. All intracompany voice traffic can now travel over its dedicated voice/fax PVC.

**Branch office** connects its key system to the Cisco 3810 via one of six analog ports on the router. The branch office can also directly connect its fax machine.

TeleChoice, a consulting firm in Boston. "When developing managed services, the carriers have been hitting the low-hanging fruit, focusing on SNA over frame and IP services."

Carriers now have to differentiate their data services because the competition is growing, and users increasingly see IP as a viable alternative to their WAN needs, he says. "Carriers have

monitoring and troubleshooting as well as monthly usage reports available via the Internet. Users also have the option of getting real-time monitoring information via the 'Net using Hewlett-Packard's OpenView system, Westendorf says.

Current Frame-Net customers can upgrade to Inter-Office by swapping their Cisco 2500 series routers for the

ment of a very similar service from Equant called iVAD (NW, Oct. 26, page 1). Equant has also teamed with Cisco to support its managed voice-over-frame relay service that's available in 41 countries, including the U.S.

Frame-Net Inter-Office is now available in 23 countries, including the U.S. Inter-Office costs the same as the carrier's



## A sermon on Linux: Part 2



Welcome back to the second part of my sermon. Here at the First and Last Church of Networking, we welcome all who seek truth, enlightenment and a good old sing-along.

First, an announcement: Our highly unscientific poll of *Network World* readers regarding the question, "Should President Clinton be impeached?" garnered a healthy response as of Oct. 27. Fifty-five percent voted for impeachment and 45% voted against. It is worth noting that many of you

wanted to impeach not only the president, but the first lady, the vice president and Congress as well!

But enough of this lighthearted shilly-shallying, there are bigger fish to fry! Yea brethren, I'm talking about revelation! There is another way for finding operating system perfection — Linux.

If you talk to those who love the likes of Linux (in which category I include FreeBSD Unix — thanks for the reminder from faithful acolyte Brother Derbyshire of Comverse Network Systems), you'll find that they are happy people. Hold hard, Brother Silverman is about to speak in tongues:

*Show us the way, Bro Gibbs!*

*Show us where there are no "Blue Screens of Death!"*

*Show us how to hack out a little C code.*

*Show us a quick PERL script or two.*

*Show us where software is developed for the customer interest, not for the enrichment of the shareholders!*

*Show us reliability.*

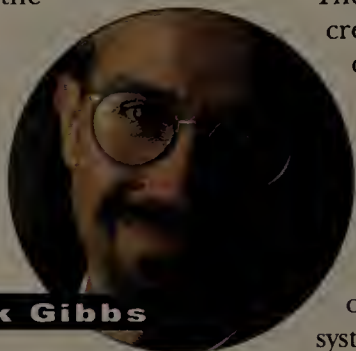
*Show us the source code.*

*We hear you, Bro Gibbs!*

Thank you Brother Silverman. Keep the faith, and I'd say your medication is a little on the light side. But I have to take issue with the rant . . . rather, assertion about software developed for the customer interest. It is a rather pinko-liberal interpretation of the motivation behind open source

development, but what the heck.

The movement supporting open source software exists because the people involved can do it. They are showing that basic operating system services don't need to be controlled by the likes of Microsoft, Novell, Sun, and Silicon Graphics.



Mark Gibbs

The open source folks are creating a lowest common denominator for computing. In essence, they are creating a computing environment in which the value is in applications and in which one removes the hegemony of commercial operating system vendors.

"Ah!" you may be saying, "while Linux may be suitable for a Unix server, it is missing the other stuff we need."

Did you know that Linux can emulate a NetWare server? Check out Caldera NetWare for Linux ([www.caldera.com/products/netware/index.html](http://www.caldera.com/products/netware/index.html)), which provides NetWare 4.10b compatible file services. How about a graphical user interface for client systems ([www.gnome.org](http://www.gnome.org)) or the ability to run Macintosh applications (Executor at [www.ardi.com](http://www.ardi.com))?

Now you may well be asking, what exactly is Gibbs' point? Well, my friend, it is this: Given there is a fast, zero-cost, reliable operating system that is in principle (if not in practice) as supportable as Windows NT, why aren't you using it?

Brothers and sisters, the world of business computing could look very different in a few years, but it will all depend on whether you are willing to embrace a new way of thinking about why you buy systems.

So whether or not you're using Linux, drop me a note at [linux@gibbs.com](mailto:linux@gibbs.com) and tell me why you think Linux is, or is not, suitable for corporate networking. I'll summarize your responses, and we'll see if Linux can have an impact in the IT world. Amen.

*Confessions to [nwcolumn@gibbs.com](mailto:nwcolumn@gibbs.com) or (800) 622-1108, Ext. 7504.*



The latest on the Internet/intranet industry

**SO MANY ONLINE AUCTIONS, SO LITTLE TIME** You're in the market for a new cell phone, say, or a digital camera, or maybe a used Scud missile. You don't have time to scour the classified ads in the local newspaper or *Soldier of Fortune*, so you decide to try your luck at one of the many auction sites proliferating on the Internet.

But which site to use? With as many as 100 online auctions currently available, this is not an easy question to answer.

Fortunately, you no longer need to launch a laborious Web search to find the appropriate auction site. A start-up called **Bidder's Edge** goes live today with a Web site ([www.biddersedge.com](http://www.biddersedge.com)) that does the online auction searching for you.

Technology developed by the Burlington, Mass., company links online auction houses much like how the Multiple Listing Service, used by realtors, compiles information on all available real estate. Using the Bidder's Edge site, customers can quickly determine if an item they're looking for is available and who's listing it.

Of course, the hurly-burly world of the auction house is no place for a naïf, so Bidder's Edge makes sure you enter the fray prepared. The site enables you not only to find the item you want, but to determine how much this type of item has sold for in the past and how many have been sold.

You can even automate your bid by keying in the top dollar you'd pay; Bidder's Edge will then bid for you and notify you via e-mail if you win. You'll be the bane of bargain hunters and tin pot dictators everywhere.

The company also has cut an exclusive deal with Lycos. Bidder's Edge runs Lycos' own AuctionConnect Web page; in return, Lycos promotes the start-up's site from its own popular portal.

Privately funded, Bidder's Edge initially plans to generate revenue by selling ads on its site. Other revenue opportunities likely will be explored in the future, **CEO James Carney** says.



Chris Nerney

**IF YOU'RE GOING TO STEAL, STEAL FROM THE BEST** Sun CEO **Scott McNealy** couldn't make it in person to the Solaris 7 announcement in New York last week. But he put in an appearance via live video broadcast from Los Angeles where, he told the Gotham crowd, he was hobnobbing with "movie stars like Sally Struthers." (Note to Scott: Struthers is about as much of a movie star as, well, you.)

McNealy proudly announced to the remote audience that CBS' venerable *60 Minutes* will be broadcasting a piece about Sun later this month.

(Note to **Ed Bradley**: Ask Scott why he has time to be on *60 Minutes*, hang around with '70s sitcom celebrities and play golf, but somehow doesn't have time to give interviews to the network trade press.)

McNealy then regaled the remote audience with another of his patented Top 10 lists. This one was "Top 10 Movies from the Microsoft Studio," and the biggest laugh-getter in the bunch — by far — was "Das Re-Boot."

For good reason. It's funny. It was funny last week, and it was funny more than two years ago when it appeared in a "Ten Internet Movies We'd Like to See" list published online at Network World Fusion ([www.nwfusion.com/netresources/6abend.html](http://www.nwfusion.com/netresources/6abend.html)).

Don't worry, Scott. I take it as a compliment. When we finally get together for our long-overdue interview, maybe I'll slip you a few more loaners.

*'Net Buzz is prepared to outbid anyone for the best Internet- and intranet-related news. Contact Chris Nerney at (508) 820-7451 or [cnerney@nww.com](mailto:cnerney@nww.com).*





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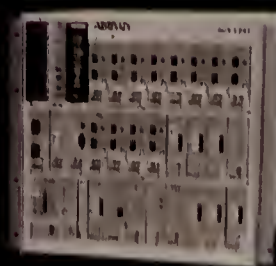
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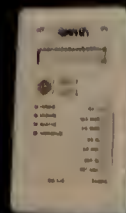
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T1 CSUs

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